

**SULIT**

**PROGRAM GEMPUR KECEMERLANGAN  
SIJIL PELAJARAN MALAYSIA 2024  
NEGERI PERLIS**

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**SIJIL PELAJARAN MALAYSIA 2024  
MATEMATIK TAMBAHAN  
Kertas 2  
Peraturan Pemarkahan  
September**

**3472/2(PP)**

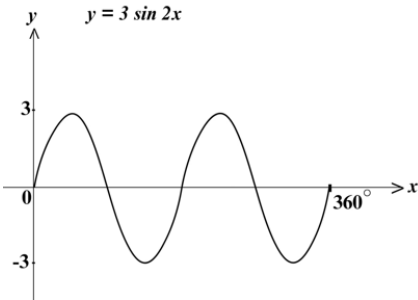
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**UNTUK KEGUNAAN PEMERIKSA SAHAJA**

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Peraturan pemarkahan ini mengandungi 18 halaman bercetak

| No. | Peraturan Permarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Markah | Jumlah Markah |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 1   | <p>(a) <math>\alpha + \beta = -4</math> @ <math>\alpha\beta = 6</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p><math>\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha+\beta}{\alpha\beta} = -\frac{2}{3}</math> atau <math>\frac{1}{\alpha} \times \frac{1}{\beta} = \frac{1}{\alpha\beta} = \frac{1}{6}</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p><math>6x^2 + 4x + 1 = 0</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p>(b) <math>x^2 - 4x + 5 = m + 2x - x^2</math> dan guna <math>b^2 - 4ac</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p><math>(-6)^2 - 4(2)(5 - m) = 0</math></p> <p><math>m = \frac{1}{2}</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p><math>\left(\frac{3}{2}, \frac{5}{4}\right)</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> | 3      | 6             |

| No. | Peraturan Permarkahan                                                                                                                                                                                                                                                                                                                                                                                                                | Markah | Jumlah Markah |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 2   |                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |               |
| (a) | <p>Guna <math>\sin^2 x + \cos^2 x = 1</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p><math>3 \sin 2x</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p>                                                                                                                                                                                                     | 2      |               |
| (b) | <p>Sudut rujukan = <math>19.47^\circ</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p><math>2x = 19.47^\circ, 160.53^\circ, 379.47^\circ, 520.53^\circ</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p><math>x = 9.735^\circ, 80.265^\circ, 189.375^\circ, 260.265^\circ</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p>      | 3      |               |
| (c) | <p><math>y = 3 \sin 2x</math></p>  <p>Bentuk graf sinus <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p>2 kalaan (<math>0^\circ \leq x \leq 360^\circ</math>) <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p>Maksimum dan minimum <span style="border: 1px solid black; padding: 2px;">1m</span></p> | 3      |               |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                      |        | 8             |

| No. | Peraturan Permarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Markah | Jumlah Markah |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 3   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |               |
| (a) | $BB' = 42 \times \left(150^\circ \times \frac{\pi}{180^\circ}\right)$ <div style="text-align: right; border: 1px solid black; border-radius: 50%; width: 40px; height: 20px; display: flex; align-items: center; justify-content: center;">1m</div> $BB' = 109.97cm$ <div style="text-align: right; border: 1px solid black; width: 40px; height: 20px; display: flex; align-items: center; justify-content: center;">1m</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2      |               |
| (b) | $AA' = 7 \times \left(150^\circ \times \frac{\pi}{180^\circ}\right)$ <div style="text-align: right; border: 1px solid black; width: 40px; height: 20px; display: flex; align-items: center; justify-content: center;">1m</div> $\frac{AA'}{BB'} = \frac{7 \times \left(150^\circ \times \frac{\pi}{180^\circ}\right)}{42 \times \left(150^\circ \times \frac{\pi}{180^\circ}\right)}$ <div style="text-align: right; border: 1px solid black; border-radius: 50%; width: 40px; height: 20px; display: flex; align-items: center; justify-content: center;">1m</div> $= \frac{7}{42}$ <div style="text-align: right; border: 1px dashed black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">□</div> $1:6$ <div style="text-align: right; border: 1px solid black; width: 40px; height: 20px; display: flex; align-items: center; justify-content: center;">1m</div> | 3      |               |
| (c) | $\left[\frac{1}{2} \times 42^2 \times 2.618\right] - \left[\frac{1}{2} \times 7^2 \times 2.618\right]$ <div style="text-align: right; border: 1px solid black; border-radius: 50%; width: 40px; height: 20px; display: flex; align-items: center; justify-content: center;">1m</div> $2244.94 \text{ cm}^2$ <div style="text-align: right; border: 1px solid black; width: 40px; height: 20px; display: flex; align-items: center; justify-content: center;">1m</div>                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2      |               |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 7             |

| No. | Peraturan Permarkahan                                                                                                                                                                  | Markah | Jumlah Markah |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 4   |                                                                                                                                                                                        |        |               |
| (a) | <p>Guna <math>\log_5 1215 = 5k + 6</math> (1m)</p> <p><math>5 \log_5 3 + \log_5 5 = 5k + 6</math> (1m)</p> <p><math>k = h - 1</math> (1m)</p>                                          | 3      |               |
| (b) | <p><math>\log_e e^x = \log_e 8^2</math> (1m)</p> <p><math>x = 2m</math> (1m)</p>                                                                                                       | 2      |               |
| (c) | <p>Tulis <math>(\sqrt{2x-3})^2 = (4 - \sqrt{2x-1})^2</math> (1m)</p> <p><math>2x - 3 = 16 - 8\sqrt{2x-1} + 2x - 1</math> (1m)</p> <p><math>x = \frac{97}{32} @ 3.03125</math> (1m)</p> | 3      |               |
|     |                                                                                                                                                                                        |        | 8             |

| No. | Peraturan Permarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Markah | Jumlah Markah |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 5   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |               |
| (a) | $\overrightarrow{PU} = \overrightarrow{PR} + \overrightarrow{RU}$ atau $\overrightarrow{PU} = \overrightarrow{PS} + \overrightarrow{SU}$ atau $\overrightarrow{PT} = \overrightarrow{PQ} + \overrightarrow{QT}$ (1m)<br>$\overrightarrow{ST} = \frac{2}{3} \overrightarrow{SQ}$ (1m)<br>$\overrightarrow{PU} = \frac{4}{3} \underset{\sim}{x} + \frac{2}{3} \underset{\sim}{y}$ (1m)<br>$\overrightarrow{PT} = \frac{2}{3} \underset{\sim}{x} + \frac{1}{3} \underset{\sim}{y}$ (1m) | 4      |               |
| (b) | Tulis $\overrightarrow{PU} = \lambda \overrightarrow{PT}$ (1m)<br>$\overrightarrow{PU} = 2 \left( \frac{4}{3} \underset{\sim}{x} + \frac{2}{3} \underset{\sim}{y} \right)$ (1m)<br>$\overrightarrow{PU} = 2 \overrightarrow{PT}$ (1m)                                                                                                                                                                                                                                                | 3      |               |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        | 7             |

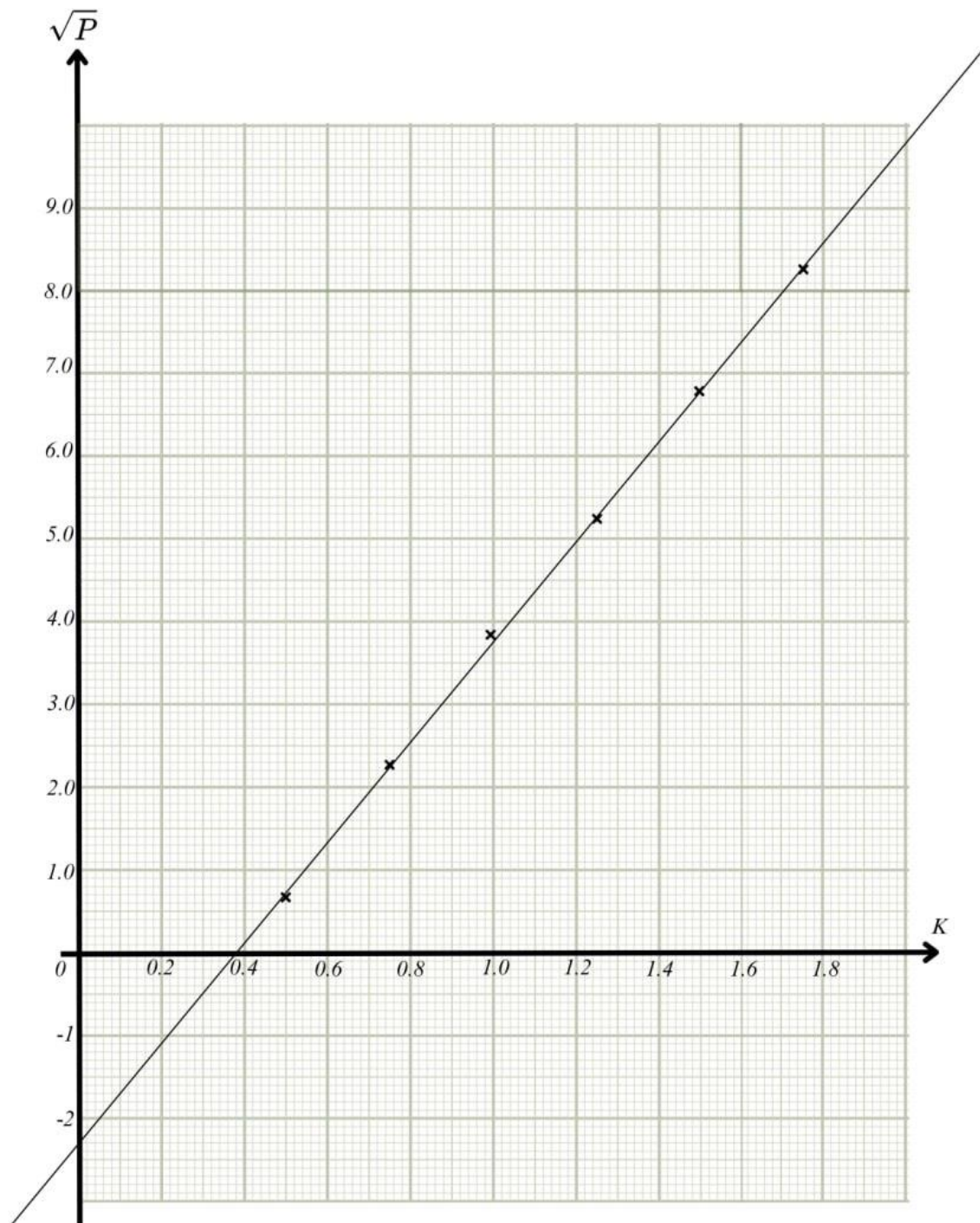
| No. | Peraturan Permarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Markah | Jumlah Markah |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 6   | $x + y + z = 140$ <span style="border: 1px solid black; padding: 2px;">1m</span><br><br>$25,000x + 40,000y + 50,000z = 5,150,000$ <span style="border: 1px solid black; padding: 2px;">1m</span><br><br>$30,000x + 50,000y + 60,000z = 6,300,000$ <span style="border: 1px solid black; padding: 2px;">1m</span><br><br>Hapuskan anu pertama dengan penggantian @ penghapusan <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br><br>Hapuskan anu kedua dengan penggantian @ penghapusan <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br><br>$x = 50 @ y = 60 @ z = 30$ <span style="border: 1px solid black; padding: 2px;">1m</span><br><br>$y = 60$ dan $z = 30$ atau <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br>$x = 50$ dan $z = 30$ atau<br>$y = 60$ dan $z = 30$ | 7      | 7             |

| No. | Peraturan Permarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Markah                     | Jumlah Markah |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------|
| 7   | <p>Tulis</p> <p>(a) <math>T_1 = \pi \left( \frac{2a}{2} \right) + 2a @ a(\pi + 2)</math></p> <p><math>T_2 = \pi \left( \frac{3a}{2} \right) + 3a @ \frac{3}{2}a(\pi + 2)</math></p> <p><math>T_3 = \pi \left( \frac{4a}{2} \right) + 4a @ 2a(\pi + 2)</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p>Guna <math>a(\pi + 2) + \frac{3}{2}a(\pi + 2) + 2a(\pi + 2)</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p><math>\frac{9}{2}a(\pi + 2)</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p>(b) Guna <math>\frac{3}{2}a(\pi + 2) - a(\pi + 2) = 2a(\pi + 2) - \frac{3}{2}a(\pi + 2)</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p><math>\frac{1}{2}a(\pi + 2) = \frac{1}{2}a(\pi + 2)</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p>Dan<br/>Janjang Aritmetik</p> <p>(c) Guna <math>T_n = 12(\pi + 2)</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <hr style="width: 20%; margin-left: 0;"/> <p><math>\left( \frac{n+1}{2} \right) a(\pi + 2) = 12(\pi + 2)</math></p> <p><math>n = 11</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p> | <p>3</p> <p>2</p> <p>2</p> | 7             |

| No.        | Peraturan Permarkahan                                                                                                                                                                                                                                                                | Markah | Jumlah Markah |      |      |      |      |      |            |      |      |      |      |      |      |   |  |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|------|------|------|------|------|------------|------|------|------|------|------|------|---|--|
| 8          |                                                                                                                                                                                                                                                                                      |        |               |      |      |      |      |      |            |      |      |      |      |      |      |   |  |
| (a)        | <table><tr><td><math>K</math></td><td>0.50</td><td>0.75</td><td>1.00</td><td>1.25</td><td>1.50</td><td>1.75</td></tr><tr><td><math>\sqrt{p}</math></td><td>0.65</td><td>2.24</td><td>3.81</td><td>5.25</td><td>6.80</td><td>8.30</td></tr></table> <div>1m</div> <div>1m</div>       | $K$    | 0.50          | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | $\sqrt{p}$ | 0.65 | 2.24 | 3.81 | 5.25 | 6.80 | 8.30 | 2 |  |
| $K$        | 0.50                                                                                                                                                                                                                                                                                 | 0.75   | 1.00          | 1.25 | 1.50 | 1.75 |      |      |            |      |      |      |      |      |      |   |  |
| $\sqrt{p}$ | 0.65                                                                                                                                                                                                                                                                                 | 2.24   | 3.81          | 5.25 | 6.80 | 8.30 |      |      |            |      |      |      |      |      |      |   |  |
| (b)        | <p>Plot <math>\sqrt{p}</math> melawan <math>K</math><br/>(paksi betul dan skala seragam)</p> <p>6 titik diplot dengan betul</p> <p>Garis lurus penyuaian terbaik</p>                                                                                                                 | 3      |               |      |      |      |      |      |            |      |      |      |      |      |      |   |  |
| (c)        | $\sqrt{p} = \frac{2}{\mu}K + \frac{2A}{\mu}$ <div>1m</div> <div><math>* c = \frac{2A}{\mu}</math></div> <div>1m</div> <div>1m</div> <div><math>* m = \frac{2}{\mu}</math></div> <div><math>A = -0.3875</math></div> <div>1m</div> <div>1m</div> <div><math>\mu = 0.3298</math></div> | 5      |               |      |      |      |      |      |            |      |      |      |      |      |      |   |  |
|            |                                                                                                                                                                                                                                                                                      |        | 10            |      |      |      |      |      |            |      |      |      |      |      |      |   |  |

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Graf soalan 8(b)



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| No. | Peraturan Permarkahan                                                                                                                                                                                                                                                                                                                                                                                                                  | Markah | Jumlah Markah |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 9   |                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |               |
| (a) | Selesaikan persamaan serentak (1m)<br>$x(2x - 5) = 0$<br>$A = (\frac{5}{2}, \frac{5}{2})$ (1m)                                                                                                                                                                                                                                                                                                                                         | 2      |               |
| (b) | Cari luas segitiga atau gantikan had $\int_2^5 2x^2 - 4x dx$ (1m)<br>$A_1 = \frac{1}{2}(\frac{5}{2})(\frac{5}{2})$ $A_2 = \left[ \left( \frac{2(\frac{5}{2})^3}{3} - \frac{4(\frac{5}{2})^2}{2} \right) - \left( \frac{2(2)^3}{3} - \frac{4(2)^2}{2} \right) \right]$<br>Kamirkan $\int 2x^2 - 4x dx$ (1m)<br>$\left[ \frac{2x^3}{3} - \frac{4x^2}{2} \right]$<br>$* A_1 - * A_2 + * A_3$ (1m)<br>$\frac{125}{24} \text{ unit}^2$ (1m) | 4      |               |
| (c) | Kamirkan $\int \pi y^2 dx$ (1m)<br>$\pi \left[ \frac{4x^5}{5} - \frac{16x^4}{4} + \frac{16x^3}{3} \right]$ atau $\pi \left[ \frac{x^3}{3} \right]$<br>Guna had $\int_2^5$ kedalam $\left[ \frac{4x^5}{5} - \frac{16x^4}{4} + \frac{16x^3}{3} \right]$ (1m)<br>$\pi \left( \frac{125}{24} - \frac{113}{120} \right)$ (1m)<br>$\frac{64}{15} \pi \text{ unit}^3$ (1m)                                                                    | 4      |               |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                        |        | 10            |

| No.  | Peraturan Permarkahan                                                                                                                                                                                                               | Markah | Jumlah Markah |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 10   |                                                                                                                                                                                                                                     |        |               |
| (a)  | <p>Guna <math>\sqrt{(9-2)^2 + (4-3)^2}</math> (1m)</p> <p><math>\sqrt{50}</math> unit (1m)</p>                                                                                                                                      | 2      |               |
| (b)  | <p><math>\sqrt{(x-2)^2 + (y-3)^2} = \sqrt{50}</math> (1m)</p> <p><math>x^2 + y^2 - 4x - 6y - 37 = 0</math> (1m)</p>                                                                                                                 | 2      |               |
| (c)  |                                                                                                                                                                                                                                     |        |               |
| (i)  | <p><math>90^\circ</math> atau <math>\frac{3}{2}\pi</math> (1m)</p> <p><math>\frac{1}{2}(\sqrt{50})^2 \left(\frac{3}{2}\pi\right)</math> (1m)</p> <p><math>\frac{75}{2}\pi</math> unit (1m)</p>                                      | 3      |               |
| (ii) | <p><math>\frac{1}{2}(\sqrt{50})(\sqrt{50})</math> atau <math>\frac{1}{2}\pi(5)^2</math> (1m)</p> <p><math>\frac{75}{2}\pi - \left(\frac{25}{2}\pi - 25\right)</math> (1m)</p> <p><math>25(\pi + 1)</math> unit<sup>2</sup> (1m)</p> | 3      |               |
|      |                                                                                                                                                                                                                                     |        | 10            |

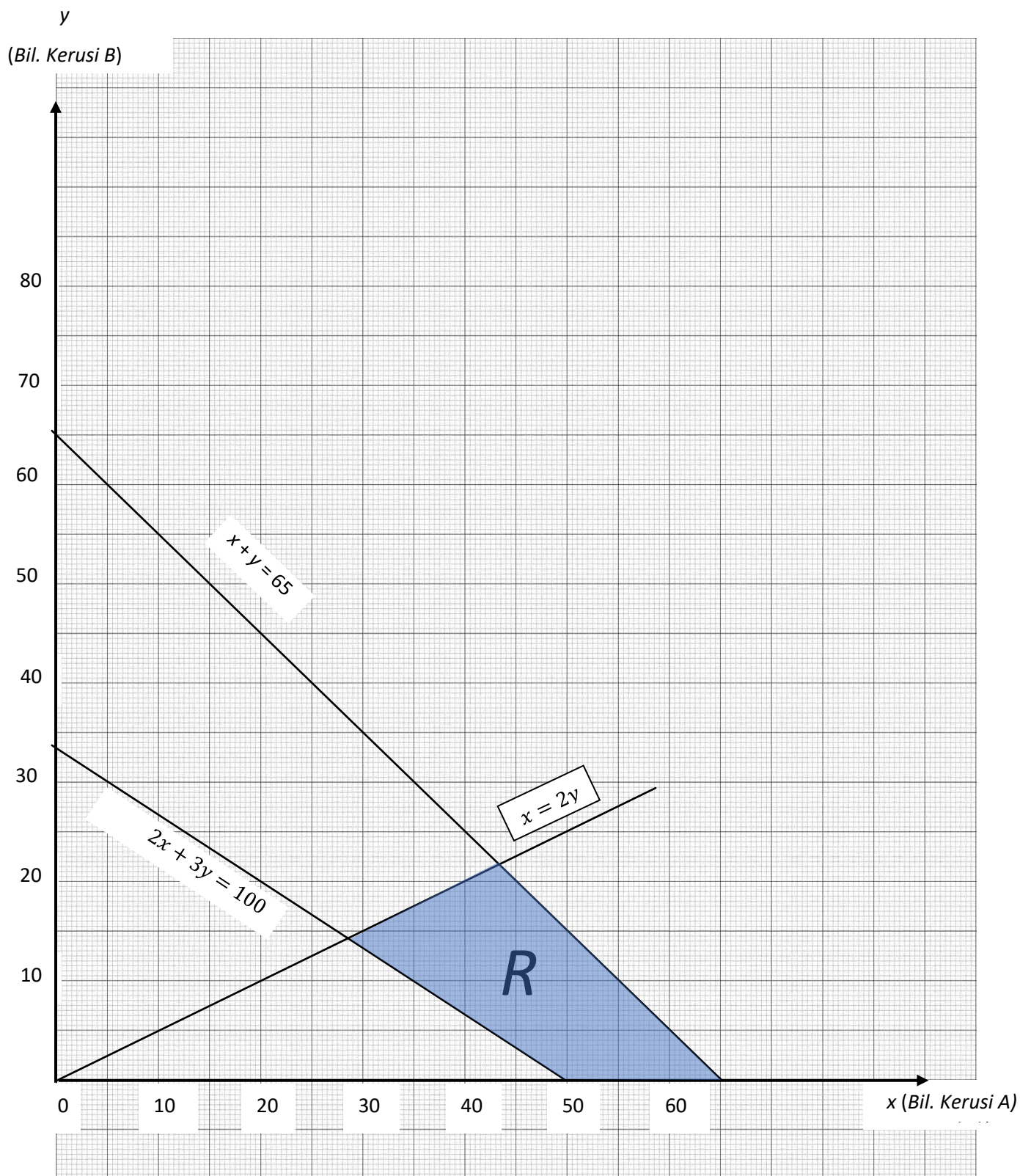
| No.  | Peraturan Permarkahan                                                                                                                                                                          | Markah | Jumlah Markah |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 11   | $z = -2.0$ atau $z = 0.667$ <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                     |        |               |
| (a)  | $P\left(Z > \frac{1.5-\mu}{\sigma}\right) = 0.0228$ atau $P\left(Z > \frac{3.5-\mu}{\sigma}\right) = 0.252$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span> |        |               |
|      | $\frac{1.5-\mu}{\sigma} = -2.0$ <span style="margin-left: 100px;"><math>\frac{3.5-\mu}{\sigma} = 0.667</math></span>                                                                           |        |               |
|      | Selesaikan persamaan serentak <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span>                                                                               |        |               |
|      | $2.667\sigma = 2$                                                                                                                                                                              |        |               |
|      | $\sigma = 0.7499$ <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                               |        |               |
|      | $\mu = 2.9998$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span>                                                                                              | 5      |               |
| (b)  |                                                                                                                                                                                                |        |               |
| (i)  | $1 - \left(\frac{5}{128} + \frac{21}{128} + \frac{21}{128} + \frac{61}{128}\right)$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span>                         |        |               |
|      | $\frac{5}{32}$ <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                                  | 2      |               |
| (ii) | ${}^5C_2 \times p^2 \times q^3 + {}^5C_3 \times p^3 \times q^2 = \frac{5}{32}$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span>                              |        |               |
|      | $q^2(p+q) = \frac{1}{64p^2}$                                                                                                                                                                   |        |               |
|      | Ganti $p+q = 1$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span>                                                                                             |        |               |
|      | $q = \frac{1}{8p}$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span>                                                                                          | 3      | 10            |

| No. | Peraturan Permarkahan                                                                                                                                                            | Markah | Jumlah Markah |
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| 12  |                                                                                                                                                                                  |        |               |
| (a) | $a = 4 - 6t$<br>$a = 4 - 6(0)$ (1m)<br><br>4 (1m)                                                                                                                                | 2      |               |
| (b) | $4 - 6t = 0$<br>$t = \frac{2}{3}$ (1m)<br>$4\left(\frac{2}{3}\right) - 3\left(\frac{2}{3}\right)^2 + 7$ (1m)<br><br>$\frac{25}{3}$ (1m)                                          | 3      |               |
| (c) | $-3t^2 + 4t + 7 = 0$<br>$3t^2 - 4t - 7 = 0$<br>$(3t - 7)(t + 1) = 0$ (1m)<br>$t = \frac{7}{3}$ (1m)                                                                              | 2      |               |
| (d) | $\int_0^2 (-3t^2 + 4t + 7) dt$<br>$\left[-\frac{3t^3}{3} + \frac{4t^2}{2} + 7t\right]_0^2$ (1m)<br><br>$[-(2)^3 + 2(2)^2 + 7(2)] - [-(0)^3 + 2(0)^2 + 7(0)]$ (1m)<br><br>14 (1m) | 3      |               |
|     |                                                                                                                                                                                  |        | 10            |

| No. | Peraturan Permarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Markah | Jumlah Markah |
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| 13  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |               |
| (a) | $\angle BAC = 67.38^\circ$ <span style="border: 1px solid black; padding: 2px;">1m</span><br><br>$BC^2 = 0.2^2 + 0.3^2 - 2(0.2)(0.3) \cos 67.38^\circ$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br><br>$0.2896 \text{ km}$ <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3      |               |
| (b) | $\frac{\sin BCA}{0.2} = \frac{\sin 67.38^\circ}{0.2896}$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br><br>$39.61^\circ$ <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2      |               |
| (c) | <p>Luas ADE, <math>\frac{1}{2} \times 0.13 \times 0.06 \times \sin 67.38^\circ</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br/> <math>0.0036</math></p> <p>Luas FGC, <math>\frac{1}{2} \times GF \times GC</math></p> <p><math>\sin 39.61^\circ = \frac{GF}{FC}</math> atau <math>\cos 39.61^\circ = \frac{GC}{FC}</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p><math>GF = FC \times \sin 39.61^\circ</math> atau <math>GC = FC \times \cos 39.61^\circ</math></p> <p><math>\frac{1}{2} [FC \times \sin 39.61^\circ \times FC \times \cos 39.61^\circ] = 0.0036</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p><math>FC = 0.12107</math> <span style="border: 1px solid black; padding: 2px;">1m</span></p> <p><math>0.09328 \text{ km}</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> | 5      | 10            |

| No.  | Peraturan Permarkahan                                                                                                                                                                                                                                                                                                                                                                                                                                | Markah | Jumlah Markah |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 14   |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |               |
| (a)  | $2x + 3y \geq 100$ <span style="border: 1px solid black; padding: 2px;">1m</span><br>$x + y \leq 65$ <span style="border: 1px solid black; padding: 2px;">1m</span><br>$x > 2y$ <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                                                                                                                       | 3      |               |
| (b)  | <p>Lukis dengan betul sekurang-kurangnya satu garis lurus dari ketaksamaan yang melibatkan <math>x</math> dan <math>y</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p>Lukis dengan betul semua garis lurus <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p>Rantau dilorek dengan betul <span style="border: 1px solid black; padding: 2px;">1m</span></p> | 3      |               |
| (c)  | (44,21) <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                                                                                                                                                                                                                                                                                               |        |               |
| (i)  | <p>Ganti mana-mana titik di dalam rantau berlorek dalam persamaan <math>80x + 120y</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span></p> <p><span style="border: 1px solid black; padding: 2px;">1m</span> 6,040</p>                                                                                                                                                                                         |        |               |
| (ii) | $35 \leq y \leq 55$ <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                                                                                                                                                                                                                                                                                   | 4      |               |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        | 10            |

Graf soalan 14(b)



| No. | Peraturan Permarkahan                                                                                                                                                                                                                                                                                         | Markah | Jumlah Markah |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|
| 15  |                                                                                                                                                                                                                                                                                                               |        |               |
| (a) | $w = 26$ atau $z = 107.5$ atau $x = 0.5$ <span style="border: 1px solid black; padding: 2px;">1m</span><br>$\frac{y}{1.8} \times 100 = 107.5$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br>$y = 1.94$ <span style="border: 1px solid black; padding: 2px;">1m</span> | 3      |               |
| (b) | Guna $\frac{26(102.86)+47(108)+2(100)+25(107.5)}{26+47+2+25}$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br>$106.38$ <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                   | 2      |               |
| (c) | $5.50 \times 140\%$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br>RM 7.70 <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                                              | 2      |               |
| (d) | $7.70 \times 106.38\% = 8.19$ <span style="border: 1px solid black; padding: 2px;">1m</span>                                                                                                                                                                                                                  | 1      |               |
| (e) | $5.50 \times 118\% = 6.49$ <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">1m</span><br>$6.49 \times 140\% = 9.09$ <span style="border: 1px solid black; padding: 2px;">1m</span><br>Dan<br>Tidak munasabah                                                                          | 2      |               |
|     |                                                                                                                                                                                                                                                                                                               |        | 10            |

PERATURAN PERMARKAHAN TAMAT