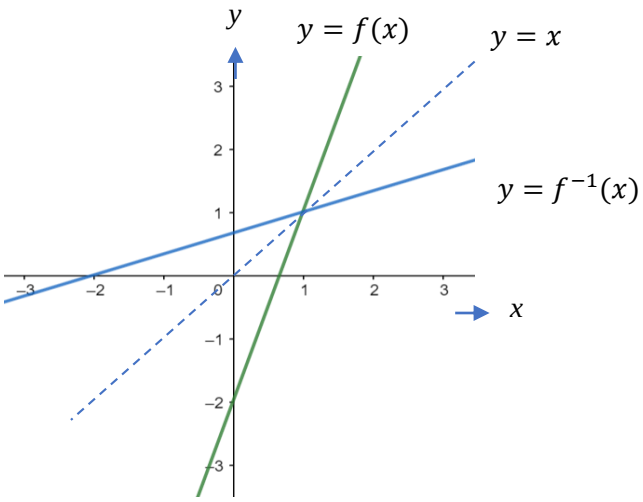
PERATURAN PEMARKAHAN KERTAS 2 SET 1

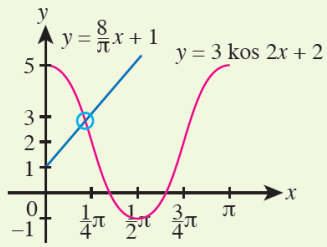
No		JAWAPAN	MARKAH	
1	(a)	$f^{-1}(x) = \frac{x+2}{3}$ atau $g^{-1}(x) = x+3$	N1 N1	2
	(b)	$fg(x) = 3(x-3)-2$ atau $g^{-1}f^{-1}(x) = g^{-1}\left(\frac{x+2}{3}\right)$ $fg(x) = 3x-11$ $= \left(\frac{x+2}{3}\right)+3$ $(fg)^{-1}(x) = \frac{x+11}{3}$ atau $g^{-1}f^{-1}(x) = \frac{x+11}{3}$ Maka : $(fg)^{-1}(x) = g^{-1}f^{-1}(x)$	K1 K1 N1	3
	(c)	 *Graf y=f(x)<br* Graf $y = f^{-1}(x)$ Graf $y = f^{-1}(x)$ adalah pantulan graf $y = f(x)$ pada garis lurus $y = x$.	P1 P1 N1	3
			8 M	
2	(a)	Katakan integer tersebut ialah x dan $x+1$ $x^2 + (x+1)^2 = 841$ $2x^2 + 2x - 840 = 0$ $x = \frac{-2 \pm \sqrt{2^2 - 4(2)(840)}}{2(2)}$ x = 20 atau x = -21 Jika x = 20, integer yang satu lagi ialah 21 Jika x = -21, integer yang satu lagi ialah -20 *Dua-dua pasangan betul	K1 K1 N1 N1	4
	(b)	$(-4p)^2 - 4p(5-p) > 0$ $20p^2 - 20p > 0$ Terima sebarang kaedah mencari julat $p < 0$, $p > 1$	K1 K1 N1	3
			7M	

3	(a)	$a + 2d = 13.5 \rightarrow (1)$ *atau* $a + 5d = 15.75 \rightarrow (2)$ $(2) - (1): 3d = 2.25,\ d = 0.75$ * Nilai d 1M $Ganti\ d = 0.75\ dalam\ (1):\ a + 2(0.75) = 13.5,\ a = 12$ * Nilai a 1M *Tinggi susunan 20 gelas* : 12+19(0.75) = 26.25 cm	K1 K1 N1 K1 N1	5
	(b)	Katakan bilangan gelas ialah *n*. $12 + (n - 1)(0.75) \geq 50$ $(n - 1)(0.75) \geq 38$ $(n - 1) \geq 50.67$ $n \geq 51.67$ $n = 52$	K1 N1	2
			7M	
4		Katakan x = harga sebuah buku latihan y =harga sebatang pen z = harga sebotol air minuman $3x + 2y + 3z = 11.40 \rightarrow (1)$ $2x + 4y + z = 9.80 \rightarrow (2)$ $x = 2z \rightarrow (3)$ Gantikan (3) dalam (1) dan (2) $9z + 2y = 11.40 \rightarrow (4)$ $5z + 4y = 9.80 \rightarrow (5)$ (4)× 2: $18z + 4y = 22.80 \rightarrow (6)$ (6) - (5) : $13z = 13$ $z = 1.00$ Maka $x = 2.00$ Gantikan nilai x dan z dalam (2) : y = 1.20 Maka harga sebuah buku latihan = RM2.00 Harga sebatang pen = RM1.20 Harga sebotol air minuman = RM1.00 • Gunakan kaedah penggantian atau penghapusan 1M • x =RM2.00 1M • y= RM 1.20 1M • z= RM 1.00 1M	P1 P1 P1 K1 N1 N1 N1	
			7	

5	(a)	$p = 3^{0.1} \quad dan \quad q = 3^{0.5}$ • Dua-dua betul $N = -3(3^{0.1} \times 3^{0.5})^5$ $= -3(3^{0.6})^5$ • Penggunaan mana-mana satu hukum log $= -3(3)^3$ $= -3^4$ $= -81$	K1 K1 N1	3
	(b)	$PQ^2 = BP^2 - BQ^2$ $BQ = \sqrt{2^2 + 5} = 3$ $\tan 30^o = \frac{1}{\sqrt{3}}$ $\frac{PQ}{3} = \frac{1}{\sqrt{3}}$ Maka $PQ = \sqrt{3}$ cm	K1 K1 K1 N1	4
			7	
6	(a)	$\overrightarrow{AE} = \overrightarrow{AD} + \overrightarrow{DE}$ $= 18\underline{y} + 15\underline{x}$	K1 N1	2
	(b)	i) $\overrightarrow{AT} = 18h\underline{y} + 15h\underline{x}$ ii) $\overrightarrow{BT} = k(-25\underline{x} + \frac{2}{3}(18\underline{y}))$ $= -25k\underline{x} + 12k\underline{y}$ iii) $\overrightarrow{BT} = \overrightarrow{BA} + \overrightarrow{AT}$ $= -25\underline{x} + 18h\underline{y} + 15h\underline{x}$ $-25k\underline{x} + 12k\underline{y} = (-25 + 15h)\underline{x} + 18h\underline{y}$ Bandingkan pekali $\underline{x}$ dan pekali $\underline{y}$ $-25k = -25 + 15h \qquad 12k = 18h$ $h = \frac{10}{21}$ dan $k = \frac{5}{7}$	N1 K1 N1 K1 K1 N1	6
			8	

7	(a)	$\left(\frac{-4+4}{2}, \frac{4+1}{2}\right)$	K1	2
		$\left(0, \frac{5}{2}\right)$	N1	
		$\left(\frac{x+2}{2}, \frac{y+9}{2}\right) = \left(0, \frac{5}{2}\right)$	K1	2
		$(-2, -4)$	N1	
		$\frac{1}{2}\begin{vmatrix} 2 & -4 & -2 & 4 & 2 \\ 9 & 4 & -4 & 1 & 9 \end{vmatrix}$		
		$\frac{1}{2}\lvert(2 \times 4) + (-4 \times -4) + (-2 \times 1) + (4 \times 9) - (9 \times -4) - (4 \times -2) - (-4 \times 4) - (1 \times 2)\rvert$	K1	2
		$\frac{1}{2}\lvert 116 \rvert$		
		$58\ unit^2$	N1	
			6	
8	(a)	(i) $0 = 27 - (x-2)^3$	K1	2
		$-27 = -(x-2)^3$		
		$3^3 = (x-2)^3$	N1	
		$x = 5\ koordinat\ (5,0)$		
		ii) $\int_0^5 27 - (x-2)^3\ dx$	K1	
		$\left[27x - \frac{(x-2)^4}{4}\right]_0^5$	K1	

		$\left[27(5) - \frac{((5)-2)^4}{4}\right]_0^5 - 0$ $115.25\ unit^2$	K1 N1	4
	(b)	$\pi \int_k^4 (\sqrt{3x+4})^2\, dx = \pi \int_k^4 3x + 4\, dx = 26\,\pi$ $\pi\left[\frac{3x^2}{2} + 4x\right]_k^4 = 26\,\pi$ $\left[\frac{3(4)^2}{2} + 4(4)\right] - \left[\frac{3(k)^2}{2} + 4(k)\right] = 26$ $-3k^2 - 8k + 28 = 0$ $k = 2$	K1 K1 K1 N1	4
			10	
9	(a)	$sin\,xkos(\frac{\pi}{6}) + kosxsin\left(\frac{\pi}{6}\right) - (sinxkos\left(\frac{\pi}{6}\right) - kosxsin\left(\frac{\pi}{6}\right))$ $2kosxsin\left(\frac{\pi}{6}\right)$ $2kosx\left(\frac{1}{2}\right)$ $kosx$	K1 N1	2
	(b)	<table><tr><td>x</td><td>0</td><td>$\frac{\pi}{4}$</td><td>$\frac{\pi}{2}$</td><td>$\frac{3\pi}{4}$</td><td>π</td></tr><tr><td>y</td><td>5</td><td>2</td><td>-1</td><td>2</td><td>5</td></tr></table> $y = \frac{8x}{\pi} + 1$	K1	

		 1 Penyelesaian	1. Bentuk kos 2. Titik maks / min 3. Kitaran atau pusingan / Anjakan	P1 P1 P1 N1	5
	(c)	$kosx(2sinx + 1) = 0$ $kosx = 0, \quad 2sinx + 1 = 0$ $x = 90°, \quad x = 270°$ $x = 180° + 30°, \quad x = 360° - 30°$		K1 N1 N1	3
				10	

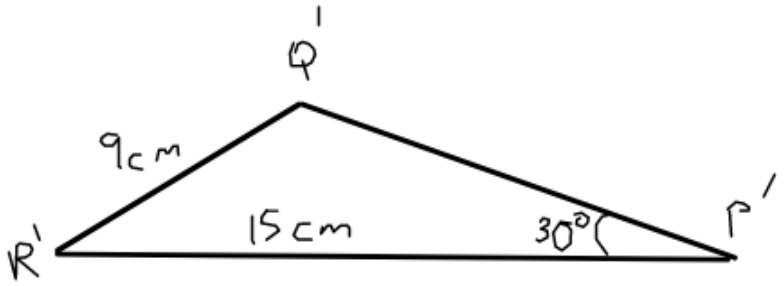
NO		JAWAPAN	MARKAH	
10	(a)	(i) $p = 0.6$ or $q = 0.4$ $P(X = 2) = 8C2(0.6)^2(0.4)^6$ 0.04129 (ii) $n(06)(0.4) = 33.36$ $n = 139$	**P1** **K1** **NI** **K1** **N1**	5
	(b)	(i) $P(X > 3.2)$ $= P\left(Z < \frac{3.2-2.9}{1.3}\right)$ = 0.4086 (ii) $\left(Z < \frac{d-2.9}{1.3}\right) = 0.35$ $\frac{d-2.9}{1.3} = -0.385$ d = 2.3995	K1 N1 K1 K1 N1	5
			10	

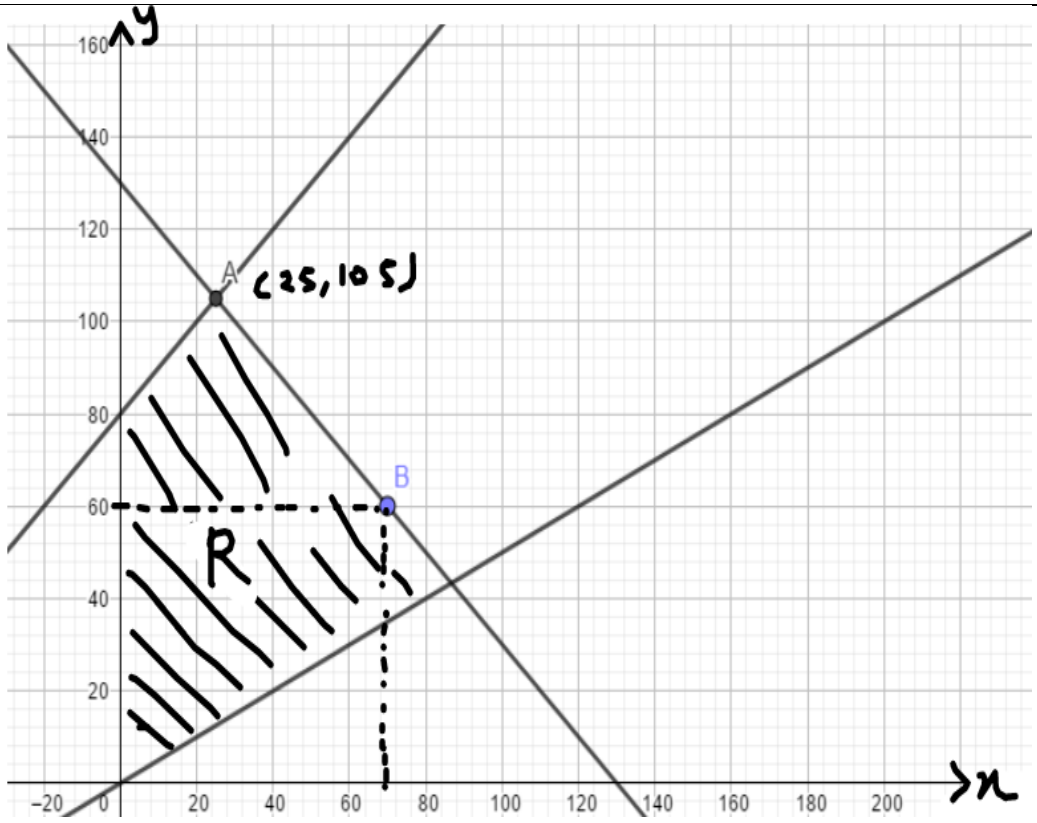
NO		JAWAPAN	MARKAH	
11	(a)	<table><tr><td>x</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>xy</td><td>7.00</td><td>9.00</td><td>11.01</td><td>13.20</td><td>15.0</td><td>16.62</td></tr></table>	N1	1
	(b)	Rujuk kertas graf (correct axes and uniform scales) All points are plotted correctly Line of best fit SILA RUJUK GRAF DI LAMPIRAN 1	K1 N1 N1	3
	(c)	$xy = px + q$ (i) From the graph, when $x = 3.5$, $xy = 12$ $xy = 12$ $3.5y = 12$ $y = 3.429$ **refer to student's graph (ii) Gradient / *kecerunan*, $m = \frac{16-6}{5.5-0.5}$ $= \frac{10}{5}$ $p = 2$ (iii) $xy = px + q$ $q = c$ $= 5$	P1 N1 K1 N1 K1 N1	6
			10	

NO		JAWAPAN	MARKAH	
12	(a)	$a = \frac{dv}{dt} = 6 - 6t$ $a = 6 - 6(4)$ $a = -18cms^{-2}$	K1 N1	2
	(b)	$6 - 6t = 0$ $t = 1$ $v = 6(1) - 3(1^2)$ $= 3 \text{ cm s}^{-1}$	K1 N1	2
	(c)	$\int 6t - 3t^2$ $= 3t^2 - t^3 + c$ When $t = 0$, $s = 0$, $c = 0$. $s = 3t^2 - t^3$. $6t - 3t^2 = 0$ $t = 0$ or 2 $s = 3(2^2) - 2^3$ $s = 4$ cm	K1 N1 K1 N1	4
	(d)	$3t^2 - t^3 = 0$ $t = 0$ or 3 $t = 3$.	K1 N1	2
			10	

13	(a)	$\frac{w}{4.00} \times 100 = 120$ $w = 4.80$	K 1 N1	2
	(b)	$y = x + 2$ $\frac{x+2}{x} \times 100 = 140$ $x = 5$ $y = 7$	K1 N1 N1	3
	(c)	$\hat{I} = \frac{120(7)+140(3)+140(4)+120(3)}{7+3+4+2}$ $\hat{I} = 136.25$	K1 N1	
	(d)	$\hat{I} = \frac{136.25 \times 130}{100}$ $\hat{I} = 177.13$ $P_{19} = 15 \times \frac{177.13}{100}$ $P_{19} = RM\ 26.57$	K1 K1 N1	5
			10	

NO		JAWAPAN	MARKAH	
14	(a)	(i) $\frac{\sin 30}{9} = \frac{\sin \angle PQR}{15}$ $\angle$ PQR = 56.44°	K1 N1	
		(ii) $15^2 = 8^2 + 10^2 - 2(8)(10)\cos \angle RSP$ $\angle$ RSP = 112.41° Area of PQRS	K1 N1 K1	

		= area of QRP + area of RSP $= \left(\frac{1}{2} \times 9 \times 15 \times \sin 93.56\right) + \left(\frac{1}{2} \times 8 \times 10 \times \sin 112.41\right)$ $= 67.3697 + 36.9792$ $= 104.3489\ cm^2$	K1 K1 N1	8
	(b)	 $\angle\ P'Q'R' = 180 - 56.44$ $P'Q'R' = 123.56°$	N1 N1	2
				10

NO		JAWAPAN	MARKAH	
15	(a)	$x + y \leq 130$ $x \leq 2y$ $y - x \leq 80$	**N1** **N1** **N1**	3
	(b)		**K1 betul sekurang2 nya satu garis lurus** **N1 Betul kesemua garis lurus** **N1 betul kawberlorek**	3

	(c)	Y = 50 , x_{max}=70	**N1**	
	(d)	From the graph , max point is (25, 105) Maximum profit $= 3(25) + 5(105)$ $= RM\ 650$	**N1** **K1** **N1**	4
			10	

Lampiran 1