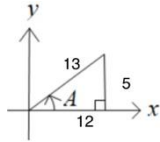
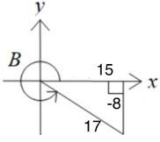


**PERATURAN PEMARKAHAN
MATEMATIK TAMBAHAN – KERTAS 1
PERCUBAAN TAHUN 2025
TINGKATAN 5**

BAHAGIAN A				
[64 MARKAH]				
Nombor	Penyelesaian markah		Sub Markah	Markah Penuh
1	(a)	$\frac{5}{\sqrt{5}-5} \times \frac{\sqrt{5}+5}{\sqrt{5}+5}$ $\frac{5(\sqrt{5}+5)}{5-25}$ $\frac{-(\sqrt{5}+5)}{4}$	K1 N1	5
	(b)	$2^{2(2x+y)} = 7 + (2^4)^x$ $2^{4x+2y} = 7 + 2^{4x}$ $2^{4x} \times (2^y)^2 = 7 + 2^{4x}$ $rs^2 = 7 + r$ $s^2 = \frac{7+r}{r}$ $s^2 - 1 = \frac{7}{r}$ $r = \frac{7}{s^2 - 1}$	K1 K1 N1	
2	(a)	$3(k-1) + 2c = 5c$ $3k - 3 = 3c$ $c = k - 1$	K1 N1	5
	(b) (i)	$3x - 2c = 3x$ $c = 0$	K1	
	(b) (ii)	$f(c-1) = c + 1$ $3(c-1) + c = c + 1$ $c = 1$	K1 N1	
3	(a)	Pelaburan tahun 2021/ <i>Investment in the year 2021</i> $= \frac{108}{100} \times 1500 = 1\,620$ Nisbah/ <i>Ratio</i> $= \frac{1620}{1500} = \frac{27}{25}$	K1 N1	5

		$= 27 : 25$		
	(b)	$T_n > 2\,500$ $(1\,500) \left(\frac{27}{25}\right)^{n-1} > 2\,500$ $\left(\frac{27}{25}\right)^{n-1} > \frac{2\,500}{1\,500}$ $(n-1)\log\frac{27}{25} > \log\left(\frac{5}{3}\right)$ $n-1 > 6.647$ $n > 7.647$ $n = 8$ Tahun/ year of 2028	P1 K1 N1	
4	(a)	$y = 2x(3-x)^4$ $\frac{dy}{dx} = (2x)\frac{d}{dx}(3-x)^4 + (3-x)^4\frac{d}{dx}(2x)$ $= (2x)(4)(3-x)^3(-1) + (3-x)^4(2)$ $= -8x(3-x)^3 + 2(3-x)^4$ Apabila/ When $x = 2$ $\frac{dy}{dx} = -8(2)(3-2)^3 + 2(3-2)^4 = -14$ Kecerunan tangen kepada lengkung di titik Q(2,4) ialah -14. <i>Gradient of the tangent to the curve at point Q(2,4) is -14.</i>	P1 K1 K1 N1	7
	(b)	Kecerunan normal kepada lengkung di titik Q <i>Gradient of the normal to the curve at point Q</i> $= -\frac{1}{(-14)} = \frac{1}{14}$ Persamaan normal di titik Q ialah <i>The equation of the normal at point Q is</i> $y - 4 = \frac{1}{14}(x - 2)$ $14y - 56 = x - 2$ $14y = x + 54$	K1 K1 N1	
5	(a)	${}^7P_5 = 2520$	N1	4
		${}^1P_1 \times {}^6P_4$ $= 360$	P1, K1 N1	

6	(a)	$p = 0.85, q = 0.15, P(X = n) = 0.1038$ ${}^nC_n(0.85)^n(0.15)^0 = 0.1038$ $(0.85)^n = 0.1038$ $n \log 0.85 = \log 0.1038$ $n = \frac{\log 0.1038}{\log 0.85} \approx 13.9$ $n = 14$	K1 K1 N1	6
	(b)	$p = 0.85, q = 0.15$ $P(X < 3) = P(X = 0) + P(X = 1) + P(X = 2)$ ${}^{14}C_0(0.85)^0(0.15)^{14} + {}^{14}C_1(0.85)^1(0.15)^{13} +$ ${}^{14}C_2(0.85)^2(0.15)^{12} = 8.765 \times 10^{-9}$	P1 K1 N1	
7	Andaikan bola disepak dari titik $O(0,0)$. <i>Suppose the ball is kicked from the point $O(0,0)$.</i> Berdasarkan rajah, paksi simetri, $x = \frac{8}{2} = 4$. <i>Based on the diagram, axis of symmetry, $x = \frac{8}{2} = 4$.</i> Titik maksimum/ <i>maximum point</i> = $(4, 2)$ Apabila bola jatuh ke tanah/ <i>When the ball touches the ground,</i> $(8, 0)$ $0 = a(8 - 4)^2 + 2$ $a = -\frac{1}{8}$ $\therefore y = -\frac{1}{8}(x - 4)^2 + 2$		P1 K1 K1 N1	4

8	$\sin A = \frac{5}{13} @ \cos A = \frac{12}{13} @$  $\sin B = \frac{-8}{17} @ \cos B = \frac{15}{17} @$ 		N1	5
	(a)	$\left(\frac{5}{13}\right)\left(\frac{15}{17}\right) + \left(\frac{12}{13}\right)\left(-\frac{8}{17}\right)$ $= \frac{-21}{221}$	K1 N1	
	(c)	$\frac{\left(\frac{5}{12}\right) - \left(-\frac{8}{15}\right)}{1 + \left(\frac{5}{12}\right)\left(-\frac{8}{15}\right)}$ $= \frac{171}{140}$	K1 N1	
9	(a)	$\vec{OS} = \vec{i} + \vec{j}$ $\vec{OT} = 3\vec{i} - 2\vec{j}$ $\vec{OU} = 6\vec{i} + k\vec{j}$ $\vec{ST} = \vec{SO} + \vec{OT}$ $= -(\vec{i} + \vec{j}) + (3\vec{i} - 2\vec{j})$ $= -(1+3)\vec{i} + (-1-2)\vec{j}$ $= 2\vec{i} - 3\vec{j}$	K1 N1	5
	(b)	$\vec{TU} = \vec{TO} + \vec{OU}$ $= -(3\vec{i} - 2\vec{j}) + (6\vec{i} + k\vec{j})$ $= 3\vec{i} + (2+k)\vec{j}$ $2 + k = 0$ $k = -2$	K1 K1 N1	
10	(a)	$\left[\frac{2x^2}{2} - 6x\right]_1^m = -4$ $m^2 - 6m - (1 - 6) + 4 = 0$ $m^2 - 6m + 9 = 0$ $(m - 3)(m - 3) = 0$ $m = 3$	K1 N1 N1	6



	(b)	pintasan-$y = 6$, pintasan-$x = -2$ kecerunan, $m = -\frac{6}{(-2)} = 3$ $(y - x) = 3x^2 + 6$ $y = 3x^2 + x + 6$	K1 K1 N1	
11	(a)	$2x + 6 = -\frac{x}{2} + 10$ $2x + \frac{x}{2} = 10 - 6$ $x = \frac{8}{5}$ Apabila/ <i>When</i> $x = \frac{8}{5}$ $y = 2\left(\frac{8}{5}\right) + 6 = \frac{46}{5}$ Koordinat/ <i>Coordinate</i> = $\left(\frac{8}{5}, \frac{46}{5}\right)$	K1 N1	6
	(b)	$y = 2(10) + 6$ $y = 26$ $N(10, 26)$ Jarak/ <i>Distance</i> = $\sqrt{\left(10 - \frac{8}{5}\right)^2 + \left(26 - \frac{46}{5}\right)^2}$ = 18.78	K1 K1 K1 N1	
12	(a)	$\frac{dh}{dx} = 3$ dan/ <i>and</i> $\frac{dk}{dx} = 2x$ Apabila/ <i>When</i> $x = 2$, $\frac{dk}{dx} = 2(2) = 4$ $\frac{dk}{dh} = \frac{dk}{dx} \times \frac{dx}{dh}$ $= 4 \times \frac{1}{3} = \frac{4}{3}$	K1 K1 N1	

[illegible]

BAHAGIAN B [16 MARKAH]				
13	(a)	(i) $m = -1$	P1	8
	(b)	$ 2x - 3 - 1 = 0$ $x = 1, \quad x = 2$	K1 N1 N1	
	(c)	$ 2x - 3 \leq 2$ dan/ <i>and</i> $ 2x - 3 \geq -2$ $\frac{1}{2} \leq x \leq \frac{5}{2}$	K1 N1	
	(d)	$ 2x - 3 - 1 = x$ $x = 4, \quad x = \frac{2}{3}$	K1 N1	
14	(a)	Apabila/ <i>When</i> $x = 2$, $y = 36 - 2^2 = 32$ Koordinat/ <i>Coordinate</i> $F(2, 32)$. $\frac{dy}{dx} = -2x$ Apabila/ <i>When</i> $x = 2$, $\frac{dy}{dx} = -2(2) = -4$ Persamaan garis lurus EFG/ <i>Equation of the straight line EFG</i> $y - 32 = -4(x - 2)$ $y = -4x + 40$	K1 K1 N1	8
		Apabila/ <i>When</i> $y = 0, \quad x = p$ $0 = -4(p) + 40$ $p = 10$	N1	

	(b)	Luas rantau berlorek/ <i>the area of shaded region</i> $= \left[\frac{1}{2} \times (10 - 2) \times 32 \right] - \int_2^6 (36 - x^2) dx$ $= 128 - \left[36x - \frac{x^3}{3} \right]_2^6$ $= 128 - 74\frac{2}{3}$ $= 53\frac{1}{3} \text{ unit}^2$	K1 K1 N1	
15	(a)	$-2 \times m_{BC} = -1$ atau/ or $(-2) \left(-\frac{3}{k} \right) = -1$ -6	K1 N1	8
	(b)	$(-6, 15)$	N1	
	(c)	$\frac{1}{2} [-6(3) + 0(0) + (-6)(15)] - [0(15) + (-6)(3) + (-6)(0)] $ 45	K1 N1	
	(d)	$\sqrt{(x - 0)^2 + (y - 3)^2}$ atau/ or $\sqrt{(-6 - 0)^2 + (0 - 3)^2}$ $\sqrt{(x - 0)^2 + (y - 3)^2} = \sqrt{(-6 - 0)^2 + (0 - 3)^2}$ atau/ or $\sqrt{(x - 0)^2 + (y - 3)^2} = \sqrt{45}$ atau/ or $x^2 + y^2 - 6y - 36 = 0$	K1 K1 N1	

PERATURAN PEMARKAHAN TAMAT