

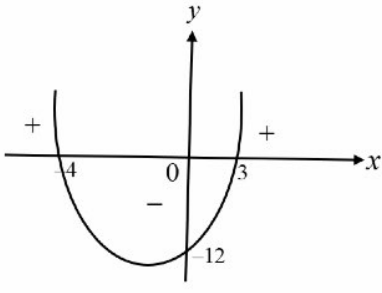
**PERATURAN PEMARKAHAN
PEPERIKSAAN PERCUBAAN SPM TAHUN 2026
YAYASAN ISLAM KELANTAN**

**MATEMATIK TAMBAHAN – TINGKATAN 5
KERTAS 1**

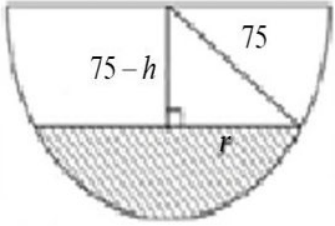


BAHAGIAN A				
NO	PERATURAN PEMARKAHAN		SUB MARKAH	MARKAH PENUH
1	(a)	0.9251 rad	N1	4
	(b)	15 (0.9251) atau BC = 10 dilihat 15 (0.9251)+15+10 38.88	K1 K1 N1	
2	- Lukis garis mengufuk pada graf $y = g(x)$ - Apabila ujian garis mengufuk dijalankan, garis mengufuk tersebut hanya memotong graf $y = g(x)$ pada satu titik sahaja. Oleh itu, fungsi songsang $g^{-1}(x)$ wujud. $0 \leq x \leq 8$		K1 K1 N1	3
3	(a)	$x^2 + x - 12 = 0$	K1	8
	(i)	$(1)^2 - 4(1)(-12)$ dan $49(>0)$	K1	
		2 punca nyata dan berbeza	N1	



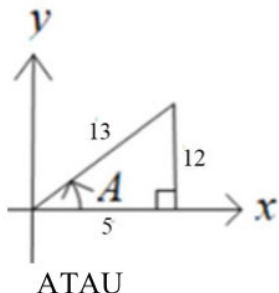
	(ii)	$(x-3)(x+4) \geq 0$ dan  $x \leq -4$, $x \geq 3$	K1	
			N1	
	(b)	$(b-2a)^2 - 4(a)(a+b) = 0$ $b(b-8a) = 0$ dan $\frac{a}{b} = \frac{1}{8}$ $a:b = 1:8$	K1	
			N1	
4	(a)	$S_n = \frac{n}{2} [2(5) + (n-1)(8)]$ $S_n = 9n - 4n^2$ Tertunjuk	K1	5
	(b)	$9(3n) - 4(3n)^2 + 765 = 0$ $(4n+17)(n-5) = 0$ $n = -\frac{17}{5}$ (ignore) , $n = 5$	K1	
5			N1	2
		$(4\sqrt{3})^y$ dilihat dan $(4\sqrt{3})^y = 12^{2x-4}$ $y = 2x - 4$	K1	
6			N1	3
		$\log_5 a = \frac{1}{h}$ atau $\frac{\log_a a^{\frac{1}{3}}}{\log_a 5}$ atau setara $\frac{1}{3} \log_5 a$ atau $\frac{1}{3} \left(\frac{1}{\log_a 5} \right)$ $\frac{1}{3h}$	P1	
7	(a)	$\frac{p}{4}$	K1	4
	(b)	$\frac{x}{y} = \frac{p}{4} - \frac{3}{4}x^2$	N1	

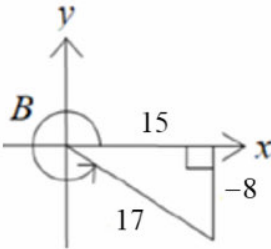
		$n+1 = \frac{p}{4} - \frac{3}{4}(k)$ $p = 3k + 4n + 4$	K1 N1	
8	(a) (i) (ii)	$9!$ atau 9P_9 K1 $362\ 880$ N1 $(6-1)!$ atau ${}^6C_3 \times 3!$ atau 6P_3 ATAU $(7-1)! \times 3!$ atau $(8-1)! \times 2!$ atau $(9-1)!$ $(6-1)! \times {}^6P_3$ ATAU $(9-1)! - (3 \times (8-1)! \times 2! - (7-1)! \times 3!)$ $14\ 400$	K1 N1 K1 K1 N1	8
	(b)	${}^6C_6 \times {}^5C_1$ atau ${}^6C_5 \times {}^5C_2$ atau ${}^6C_4 \times {}^5C_3$ ${}^6C_6 \times {}^5C_1 + {}^6C_5 \times {}^5C_2 + {}^6C_4 \times {}^5C_3$ 215	P1 K1 N1	
9	(a) (b)	$\sqrt{k^2 + 2^2} = \sqrt{29}$ K1 $\overrightarrow{AB} = \overrightarrow{AO} + \overrightarrow{OB}$ dan $*\begin{pmatrix} 5 \\ 2 \end{pmatrix} = \begin{pmatrix} 3 \\ -8 \end{pmatrix} + \begin{pmatrix} h \\ 10 \end{pmatrix}$ K1 $h = 2$ N1 $\overrightarrow{OB} = \begin{pmatrix} *2 \\ 10 \end{pmatrix}$	K1 K1 N1 N1	4
10	(a)	$\frac{dy}{dm} = -12m^3$ dan $\frac{dx}{dm} = 8m$ ATAU $\frac{dy}{dx} = -12m^3 \times \frac{1}{8m}$ $\frac{dy}{dx} = -\frac{3}{2} \left(\frac{x-2}{4} \right)$	K1 K1	

		$\frac{dy}{dx} = -\frac{3}{4}$	N1	
	(b) (i)	 $r^2 = 75^2 - (75 - h)^2$ $A = \pi(150h - h^2)$	K1	9
	(ii)	$\partial h = \frac{2}{100} h \quad \text{atau} \quad \frac{dA}{dh} = 150\pi - 2\pi h$ $\partial A = (150\pi - 2\pi h) \left(\frac{2}{100} h \right)$ $= \frac{\pi h}{25} (75 - h)$	K1 K1 N1	
11	(a)	$2n \quad \text{atau} \quad \left[\frac{x^2}{2} \right]_1^m \quad \text{K1}$ $2n - \left[\frac{m^2}{2} - \frac{1^2}{2} \right] = \frac{37}{2} \quad \text{K1}$ $m = 2\sqrt{n-9} \quad \text{atau} \quad \text{setara.} \quad \text{N1}$	K1 K1 N1	
	(b)	$y = \frac{4x^2}{2} + 5x + c$ $2 = 2(-2)^2 + 5(-2) + c \quad \text{dan selesaikan } c \quad \text{atau}$ $c = 4$ $16 = 2(-4)^2 + 5(-4) + c \quad \text{dan selesaikan } c$ $c = 4$ $y = 2x^2 + 5x + 4$	K1 K1 N1	

	(c)	$\frac{2}{3} \times 12$ atau 8 atau 16 PI $2 \times (-8)$ K1 -16 N1	P1 K1 N1	
12	(a)	${}^3C_3(p)^3(q)^{3-3} = \frac{1}{27}$ dan selesaikan p atau ${}^3C_0(p)^0(q)^{3-0} = \frac{8}{27}$ dan selesaikan q $p = \frac{1}{3}$	K1 N1	6
	(b) (i)	$P\left(Z > \frac{65-56}{4}\right)$ $= 0.0228$	K1 N1	
	(ii)	$P(Z < k) = 0.5 - 0.3665$ $k = -1.110$	K1 N1	
BAHAGIAN B				
13	(a) (i)	$g(x) = \frac{x+7}{4}$ N1	N1	8
	(ii)	$\frac{2m+7}{4} = k+5$ $m = \frac{4k+13}{2}$	K1 N1	
	(b) (i)	$\frac{(x-1)}{1+x} - 1$ $f^2(x) = \frac{1+x}{1+\left(\frac{x-1}{1+x}\right)}$ $f^2(x) = -\frac{1}{x}, x \neq 0$	K1 N1	
	(ii)	$f^4(x) = -\frac{1}{\left(-\frac{1}{x}\right)}$ $f^4(x) = x$	K1 N1	



	(iii)	$f^{25}(x) = f[f^{24}(x)]$ $= \frac{x-1}{1+x}$	N1	
14	(a)	$m_{BC} = \frac{p-16}{0-(-3)} \text{ dan } m_{AD} = \frac{0-12}{-2-(-5)} \text{ atau}$ $m_{DC} = \frac{16-12}{-3-(-5)} \text{ dan } m_{AB} = \frac{p-0}{0-(-2)}$ $p = 4$ $\frac{x}{-2} + \frac{y}{4} = 1$	K1	8
			N1	
			N1	
	(b)	$\frac{-5n+(-1)m}{m+n} = -2 \text{ atau } \frac{12n+(-4)m}{m+n} = 0$ $\frac{m}{n} = \frac{3}{1}$ $m = 3 \text{ dan } n = 1$	K1	
			K1	
			N1	
	(c)	$\sqrt{(x-(-2))^2 + (y-0)^2} = 6$ $x^2 + y^2 + 4x - 32 = 0$	K1	
			N1	
15	(a)	225^0	N1	
	(b)	$\cos A = \frac{5}{13} \text{ atau } \tan A = \frac{12}{5} \text{ atau}$  ATAU	K1	

		$\sin B = -\frac{8}{17} \quad \text{atau} \quad \cos B = -\frac{15}{17} \quad \text{atau}$  $\left(\frac{5}{13}\right)\left(\frac{15}{17}\right) + \left(\frac{12}{13}\right)\left(-\frac{8}{17}\right)$ $-\frac{21}{221}$	K1 N1	8
	(c)	$4 \sin x = \sqrt{2} \left(\frac{1}{\cos x} \right) \quad \text{atau} \quad 4 \sin x \cos x = \sqrt{2}$ $\sin 2x = \frac{\sqrt{2}}{2} \quad \text{dan} \quad \text{sudut rujukan} = 45^\circ$ $2x = 45^\circ, 135^\circ, 405^\circ, 495^\circ$ $x = 22.5^\circ, 67.5^\circ, 202.5^\circ, 247.5^\circ \quad \text{N1}$	K1 K1 K1 N1	

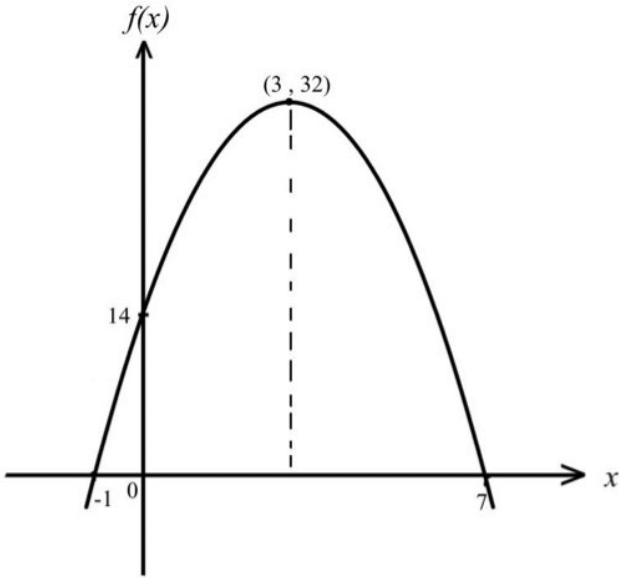
PERATURAN PEMARKAHAN TAMAT



**PERATURAN PEMARKAHAN
MATEMATIK TAMBAHAN – KERTAS 2
PERTENGAHAN TAHUN 2026
TINGKATAN 5**

BAHAGIAN A [50 MARKAH]				
Nombor	Penyelesaian markah		Sub Markah	Markah Penuh
1	(a)	$kx + 2 = x^2 + 4x + 6$	K1	7
		$x^2 + (4 - k)x + 4 = 0$		
		$b^2 - 4ac = 0$		
		$(4 - k)^2 - 4(1)(4) = 0$	K1	
		$(4 - k)^2 = 16$		
		$4 - k = \pm 4$		
		Maka / So,		
		$k = 0$ atau / or $k = 8$	N1	
	(b)	(i) $f(x) = -2x^2 + 12x + 14$		
		$f(x) = -2(x^2 - 6x) + 14$		
		$= -2 \left[x^2 - 6x + \left(\frac{-6}{2}\right)^2 - \left(\frac{-6}{2}\right)^2 \right] + 14$	K1	
		$= -2[(x - 3)^2 - 9] + 14$		
		$f(x) = -2(x - 3)^2 + 32$	N1	
	(ii)			
		o Melukis bentuk graf kuadratik negative yang betul (berbentuk $\cap$)	N1	
		o Label titik maksimum, pintasan-y, pintasan-x	N1	

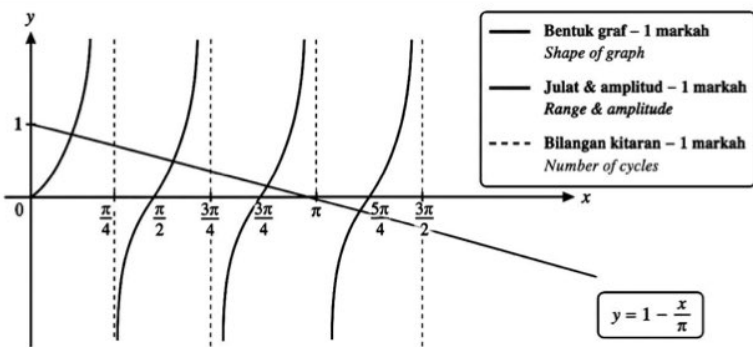


				
2	(a)	$\log_m T = 3 + \log_m R$ $\log_m T = \log_m m^3 + \log_m R$ $\log_m T = \log_m Rm^3$ $T = Rm^3$ $m^3 = \frac{T}{R}$ $m = \sqrt[3]{\frac{T}{R}}$	K1 N1	7
	(b)	$(\sqrt{m} + \sqrt{n})^2 + (\sqrt{m} - \sqrt{n})^2 = 8^2$ $2m + 2n = 64, m + n = 32$ $\frac{1}{2}(\sqrt{m} + \sqrt{n})(\sqrt{m} - \sqrt{n}) = 11$ $m - n = 22$ $m = 27, n = 5$ (Kedua-dua nilai / both values)	K1 K1 K1 K1 N1	
3	Anggap / Let : Mi goreng / <i>Fried noodles</i> = x Jus oren / <i>Orange juice</i> = y Sepotong kek / <i>A slice of cake</i> = z $x + y + z = 15 \dots (1)$ $2x + y + 2z = 28 \dots (2)$ $3x + 2y + 5z = 47 \dots (3)$		Betul sekurang-kurangnya dua persamaan dari maklumat. N1	7

$(1) \times 2: \quad 2x + 2y + 2z = 30 \dots (4)$ $(3) - (4): \quad 3x + 2y + 5z = 47$ $\underline{(-)2x + 2y + 2z = 30}$ $x + 3z = 17 \dots (5)$ $(2) - (1): \quad 2x + y + 2z = 28$ $\underline{(-) \quad x + y + z = 15}$ $x + z = 13 \dots (6)$ $(1) - (2): \quad x + 3z = 17$ $\underline{(-)x + z = 13}$ $2z = 4$ $z = 2 \dots (7)$ Gantikan $z = 2$ ke dalam (6) / <i>Substitute $z = 2$ into (6)</i> $x + z = 13$ $x + 2 = 13$ $x = 11$ Gantikan $x = 11$ dan $z = 2$ ke dalam (1) / <i>Substitute $x = 11$ and $z = 2$ into (1)</i> $x + y + z = 15$ $11 + y + 2 = 15$ $y = 2$ Maka, $x = 11, y = 2, z = 2$. Harga sepinggan mi goreng ialah RM11, harga segelas jus oren ialah RM2 dan harga sepotong kek ialah RM2. <i>Thus, the price of a plate of fried noodles is RM11, the price of a glass of orange juice is RM2 and the price of a slice of cake is RM2.</i> Harga asal Set 1 / Original price of Set 1: $11 + 4 + 2 = 17 \quad (2 \text{ gelas jus oren} = 2 \times \text{RM2} = \text{RM4})$ Penjimatan / Savings: $17 - 15 = 2$ Peratus penjimatan / Percentage of savings: $\frac{2}{17} \times 100\%$ $= 11.67\%$	K1 K1 N1 K1 K1 N1	
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4	(a)	$\angle PAB = \sin^{-1}\left(\frac{8}{10}\right) = 0.9273 \text{ rad}$ $\angle PAQ = 2 \times 0.9273 = 1.8546 \text{ rad}$	K1 N1	5
	(b)	$\angle PBQ = 2 \times \sin^{-1}(0.6) = 1.2870 \text{ rad}$ Tembereng Bulatan Pusat A / Segment of Circle Center A Luas Sektor / Area of Sector PAQ = $\frac{1}{2}(6^2)(1.8546) = 33.3828$ Luas Segi Tiga / Area of Triangle PAQ = $\frac{1}{2}(6^2) \sin(1.8546) = 17.2800$ Luas Tembereng / Area of Segment PAQ = $33.3828 - 17.2800 = 16.1028 \text{ cm}^2$ Tembereng Bulatan Pusat B / Segment of Circle Center B Luas Sektor / Area of Sector PBQ = $\frac{1}{2}(8^2)(1.2870) = 41.1840$ Luas Segi Tiga / Area of Triangle PBQ = $\frac{1}{2}(8^2) \sin(1.2870) = 30.7200$ Luas Tembereng / Area of Segment PBQ = $41.1840 - 30.7200 = 10.4640 \text{ cm}^2$ Jumlah Luas Berlorek / Total Shaded Area Jumlah Luas = Luas Tembereng PAQ + Luas Tembereng PBQ Jumlah Luas / Total Area = $16.1028 + 10.4640$ $= 26.57 \text{ cm}^2$	K1 K1 N1	
5	(a)	$\begin{aligned} \cot x - \tan x &= \frac{\cos x}{\sin x} - \frac{\sin x}{\cos x} \\ &= \frac{\cos^2 x - \sin^2 x}{\sin x \cos x} \\ &= \frac{\cos 2x}{\sin x \cos x} \quad (\sin 2x = 2 \sin x \cos x) \\ &= \frac{\cos 2x}{\frac{1}{2} \sin 2x} \quad \left(\frac{1}{2} \sin 2x = \frac{1}{2} (2 \sin x \cos x)\right) \\ &= 2 \cot 2x \\ &= 2 \left(\frac{1}{\tan 2x}\right) \\ &= \frac{2}{\tan 2x} \end{aligned}$	K1 K1 N1	8

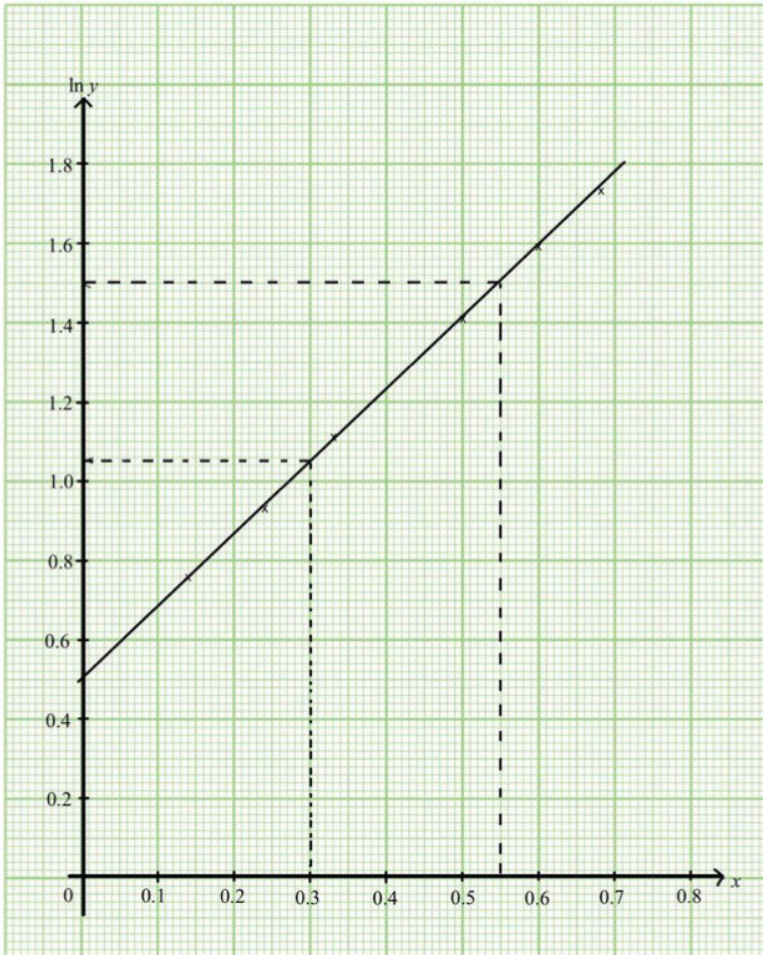
	(b)	 $\frac{2}{\cot x - \tan x} = 1 - \frac{x}{\pi}$$\frac{2}{\tan x} = 1 - \frac{x}{\pi}$$\frac{2}{\frac{2}{y}} = 1 - \frac{x}{\pi}$$y = 1 - \frac{x}{\pi}$	P1,P1,P1	
			K1	
			N1	
6	(a)	$P = \frac{4}{5} = 0.8$ $n = 6$ $X \sim B(6, 0.8)$ $P(X \geq 5) = P(X = 5) + P(X = 6)$ ${}^6C_5 (0.8)^5 (0.2) + {}^6C_6 (0.8)^6 (0.2)^0$ $= 0.6554$	K1	9
			K1	
			N1	
	(b)	(i) $X \sim N(200, 400)$ $\sigma = \sqrt{400} = 20$ $Z = \frac{X - \mu}{\sigma} = \frac{235 - 200}{20} = 1.75$ $P(X > 235) = P(Z > 1.75)$ $P(Z < 1.75) = 0.9599$ $P(Z > 1.75) = 1 - 0.9599 = 0.0401$ $\therefore P(X > 235) = 0.0401$	K1 K1	
			N1	
		(ii) $P(X > m) = \frac{422}{500} = 0.844$ $P(X \leq m) = 1 - 0.844 = 0.156$ $P(Z < z) = 0.156$ $z = -1.01$	K1 K1	

		$z = \frac{m - \mu}{\sigma}$ $-1.01 = \frac{m - 200}{20}$ $-20.2 = m - 200$ $m = 179.8 \text{ g}$	N1	
7	(a)	$\frac{1}{2} (0(8) + (-6)(2) + k(0)) - (0(-6) + 8(k) + 2(0)) = 30$ $\frac{1}{2} -12 - 8k = 30$ $\frac{1}{2} 8k + 12 = 30$ $ 8k + 12 = 60$ $k = 6$	K1 N1	7
	(b)	(i) $\frac{m(6)+n(-6)}{m+n} = 2$ $2(m + n) = 6m - 6n$ $2m + 2n = 6m - 6n$ $8n = 4m \Rightarrow \frac{m}{n} = \frac{2}{1}$ $MQ: QN = 2 : 1$	K1 N1	
		(ii) $PN = 2PQ$: $\sqrt{(x - 6)^2 + (y - 2)^2} = 2\sqrt{(x - 2)^2 + (y - 4)^2}$ $(x - 6)^2 + (y - 2)^2 = 4[(x - 2)^2 + (y - 4)^2]$ $(x^2 - 12x + 36) + (y^2 - 4y + 4) = 4(x^2 - 4x + 4 + y^2 - 8y + 16)$ $x^2 + y^2 - 12x - 4y + 40 = 4x^2 + 4y^2 - 16x - 32y + 80$ $3x^2 + 3y^2 - 4x - 28y + 40 = 0$	K1 K1 N1	



BAHAGIAN B

[30 MARKAH]

Nombor	Penyelesaian markah							Sub Markah	Markah Penuh									
8	(a)	<table><tr><td>x</td><td>0.14</td><td>0.24</td><td>0.36</td><td>0.50</td><td>0.60</td><td>0.68</td></tr><tr><td>$\ln y$</td><td>0.76</td><td>0.94</td><td>1.16</td><td>1.42</td><td>1.60</td><td>1.74</td></tr></table> ⇒ Plot $\ln y$ melawan x ○ Paksi-paksi betul dan skala seragam ○ Sekurang-kurangnya satu titik betul ⇒ 6 titik diplot dengan betul ○ Paksi-paksi betul dan skala seragam ○ Garis lurus penyuaian terbaik 	x	0.14	0.24	0.36	0.50	0.60	0.68	$\ln y$	0.76	0.94	1.16	1.42	1.60	1.74	N1	10
x	0.14	0.24	0.36	0.50	0.60	0.68												
$\ln y$	0.76	0.94	1.16	1.42	1.60	1.74												
			K1															
			N1															
			N1															
	(b)	(i) Apabila / when $x = 0.3$																

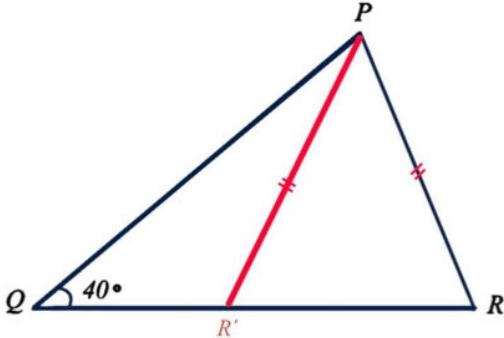
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		$\ln y = 1.05$ $y = 2.858$	N1	
		(ii) Apabila / when $y = 4.5$ $\ln 4.5 = 1.05$ $x = 0.55$	N1	
		(iii) $y = ke^{\frac{x}{p}}$ $\ln y = \ln ke^{\frac{x}{p}}$ $\ln y = \ln k + \ln e^{\frac{x}{p}}$ $\ln y = \ln k + \frac{x}{p}$ $\ln y = \left(\frac{1}{p}\right)x + \ln k$ $\ln k = \text{Pintasan-}y / y\text{-intercept}$ $\ln k = 0.5$ $k = 1.649$ $\frac{1}{p} = \text{Kecerunan graf} / \text{gradient of the graph}$ $= \frac{1.6 - 0.5}{0.6 - 0}$ $\frac{1}{p} = \frac{11}{6}$ $p = 0.545$	P1 N1 K1 N1	
9	(a)	(i) $\overrightarrow{BS} = \overrightarrow{BC} + \overrightarrow{CS}$ or $\overrightarrow{CT} = \overrightarrow{CB} + \overrightarrow{BT}$ or $\overrightarrow{CT} = \overrightarrow{CB} + \frac{4}{5}\overrightarrow{BA}$ $-3x - 12y$	K1 N1	10
		(ii) $-\frac{36}{5}x + \frac{12}{5}y$	N1	
	(b)	$k\overrightarrow{BS} = \overrightarrow{BC} + \overrightarrow{CU}$ or $k\overrightarrow{BS} = \overrightarrow{BC} + h\overrightarrow{CT}$ $k(-3x - 12y) = h\left(-\frac{36}{5}x + \frac{12}{5}y\right) - 12y$ $-3k = -\frac{36}{5}h$ or $-12k = \frac{12}{5}h - 12$	K1 K1 K1	

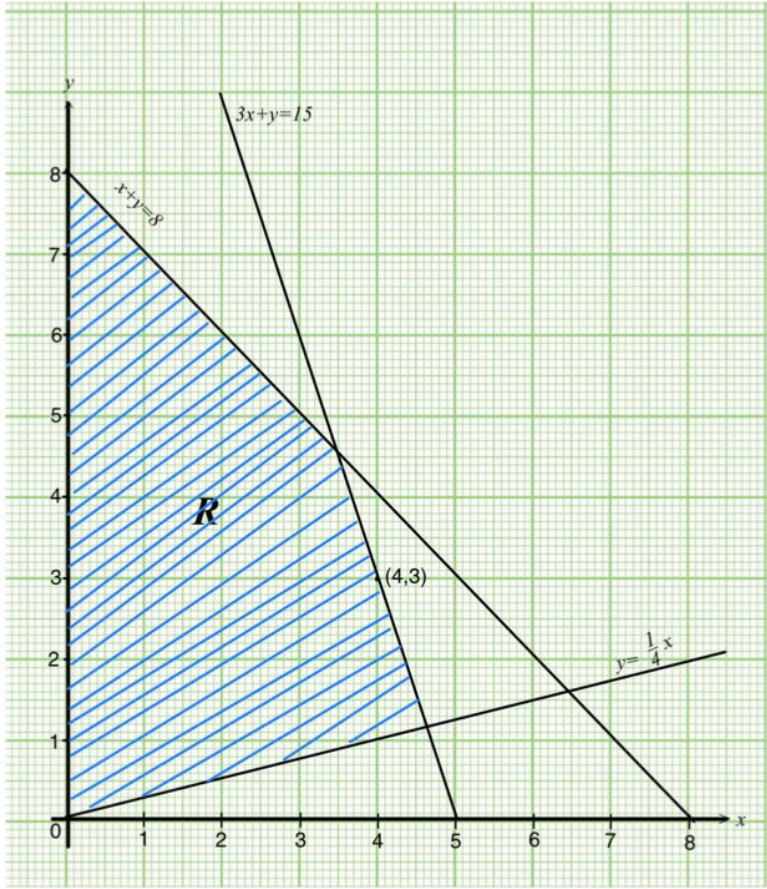
		$h = \frac{5}{13}$ $k = \frac{12}{13}$	N1,N1	
	(c)	$ \overrightarrow{AB} ^2 = \overrightarrow{AC} ^2 + \overrightarrow{CB} ^2 \text{ or } [9(5)]^2 + [12(2)]^2$ 51 unit	K1 N1	
10	(a)	$y = \frac{25}{x^2} = 25x^{-2}$ $\frac{dy}{dx} = (-2)(25x^{-3})$ $= -\frac{50}{x^3}$ Apabila/When = $x = 10, \frac{dy}{dx} = -\frac{50}{10^3} = -0.05$ dan/and $\delta x = 10.03 - 10 = 0.03$ Maka/So, $\delta y \approx \frac{dy}{dx} \times \delta x$ $= (-0.05)(0.03)$ $= -0.0015$ Apabila/When $x = 10, y = \frac{25}{10^2}$ Apabila x bertambah sebanyak 0.03, y menyusut sebanyak 0.0015./ When x increases by 0.03, y decreases by 0.0015. Maka, $\frac{25}{(10.03)^2} = \frac{25}{10^2} + (-0.0015)$ $= 0.25 - 0.0015$ $= 0.2485$	K1 K1 N1	10
	(b)	(i) $\int_0^1 (x^2 + 1) dx \text{ or } \frac{1}{2}(2)(5)$ $\left[\frac{x^3}{3} + x \right]_0^1$ $6\frac{1}{3} @ 6.333$	P1 K1 N1	



		(ii) $\pi \int_1^3 (y - 1) dy$ $\pi \left[\frac{y^2}{2} + y \right]_1^3$ $\pi \left[\left(\frac{3^2}{2} - 3 \right) - \left(\frac{1}{2} - 1 \right) \right]$ 2π	K1 K1 K1 N1	
11	(a)	$a = 5000, \quad r = 1.08$ $T_n = 5000(1.08)^{n-1}$	P1 N1	10
	(b)	$n = 2027 - 2015 + 1 = 13$ $T_n = 5000(1.08)^{12} = 12590.85$ RM12591	K1 N1	
	(c)	$5000(1.08)^{n-1} \leq 20000$ $(1.08)^{n-1} \leq 4$ $(n - 1) \log 1.08 \leq \log 4$ $(n - 1) \leq \frac{\log 4}{\log 1.08}$ $(n - 1) \leq 18.01$ $n \leq 19.01$ $\therefore n = 19$	K1 K1 N1	
	(d)	$S_{19} = \frac{5000[(1.08)^{19} - 1]}{1.08 - 1}$ $= 207202.30$ $\therefore RM207202$	K1 K1 N1	

BAHAGIAN C [20 MARKAH]				
Nombor	Penyelesaian markah		Sub Markah	Markah Penuh
12	(a)	(i) Luas / Area $\Delta PQR = 24$ $\frac{1}{2} \times 8 \times QR \times \sin 40^\circ = 24$ $QR = \frac{24}{4 \times \sin 40^\circ}$ $QR = 9.334cm$	K1	10
		(ii) $PR^2 = 8^2 + (9.334)^2 - 2(8)(9.334) \cos 40^\circ$ $PR^2 = 36.720$ $PR = 6.060$	K1 N1	
		(iii) $\frac{\sin \angle PRQ}{8} = \frac{\sin 40^\circ}{6.060}$ $\angle PRQ = 58.06^\circ$	K1 N1	
	(b)	(i)	N1	
				
		(ii) $\angle PR'Q = 180^\circ - \angle PR'R = 180^\circ - 58.06^\circ = 121.94^\circ$ $\angle QPR' = 180^\circ - 40^\circ - 121.94^\circ = 18.06^\circ$ $\text{Luas / Area } \Delta PQR' = \frac{1}{2} \times PQ \times PR' \times \sin(\angle QPR')$ $\text{Luas / Area } \Delta PQR' = \frac{1}{2} \times 8 \times 6.060 \times \sin(18.06^\circ)$ $= 7.51cm^2$	K1 K1 N1	

13	(a)	(i) $V = \int (24 - 8t) dt$ $V = -4t^2 + 24t + C$ Ganti / <i>Substitute</i> $V = 9, t = 0$ $C = 9$ $\therefore V = -4t^2 + 24t + 9$ $0 = -4t^2 + 24t + 9$ $t = \frac{-24 \pm \sqrt{24^2 - 4(-4)(9)}}{2(-4)}$ $t = 6.35 \text{ saat}$	K1	10
		(ii) $S = \int (-4t^2 + 24t + 9) dt$ $S = -\frac{4}{3}t^3 + 12t^2 + 9t$ Apabila / <i>when</i> $t = 6.35$ $S = -\frac{4}{3}(6.35)^3 + 12(6.35)^2 + 9(6.35)$ $= 200.32m$ Apabila / <i>when</i> $t = 8$ $S = -\frac{4}{3}(8)^3 + 12(8)^2 + 9(8)$ $= 157.33m$ Jumlah Jarak / <i>Total distance</i> $= 200.32 + (200.32 - 157.33)$ $= 243.31m$	K1 K1 K1 N1	
	(b)	$S_Q = \int (3t^2 - 12t + 8) dt$ $S_Q = t^3 - 6t^2 + 8t$ Apabila / <i>when</i> $t = 6.35$ $S_Q = (6.35)^3 - 6(6.35)^2 + 8(6.35)$ $= 65.11m$ Jarak antara kereta lumba P dan Q / <i>Distance between toy racing car P and Q</i> Jarak $= S_P - S_Q$ $= 200.32 - 65.11$ $= 135.21m$	K1 K1 N1	

14	(a)	$x + y \leq 8$ $x \leq 4y$ $600x + 200y \leq 3000$	N1 N1 N1	10
	(b)	 Melukis dengan betul sekurang-kurangnya satu garis lurus daripada ketaksamaan yang melibatkan x dan y. <i>Draw correctly at least one straight line from the inequalities which involves x and y</i> Melukis dengan betul ketiga-tiga garis lurus. <i>Draw correctly all the three straight lines</i> Nota: Terima garis putus-putus <i>Note: Accept dashed lines</i> Rantau yang betul dilorekkan. / <i>The correct region shaded.</i>	K1 N1 N1	
	(c)	(i) 1	N1	

		(ii) Titik maksimum / <i>Maximum point</i> = (4,3) Guna / <i>Use</i> $32x + 7y$ Untuk titik dalam rantau / <i>For point in the region R</i> $32(4) + 7(3) = 149$ <u>Nota / Note:</u> SS-1 jika simbol “=” tidak digunakan langsung atau lebih daripada tiga ketaksamaan diberikan dalam (a). <i>SS-1 if in (a), the symbol “=” is not used at all or more than three inequalities are given.</i> Dalam (b), SS-1 jika calon tidak menggunakan skala yang diberikan atau menukar kedudukan paksi-x dan paksi-y. <i>In (b), SS-1 if the candidate does not use the scale given or does not use graph paper or interchange between x-axis and y-axis.</i>	N1 K1 N1	
15	(a)	(i) $\frac{140 \times x}{100} = 4.20$ $x = RM3.00$	N1	10
		(ii) $y = \frac{4.20}{3.00} \times 100$ $= 140$	N1	
	(b)	$\bar{I}_{\frac{2017}{2015}} = \frac{(130 \times 40) + (140 \times 30) + (150 \times 5)}{40 + 30 + 5}$ $= \frac{5200 + 4200 + 750}{75}$ $= \frac{10150}{75}$ $= 135.33$	K1 K1 N1	
	(c)	(i) $\bar{I}_{\frac{2015}{2013}} = \frac{156 \times 100}{135.33}$ $= 115.27$	K1 N1	
		(ii) $\frac{C_{2017}}{0.25} \times 100 = 156$ $C_{2017} = RM0.39$ $RM156 \div RM0.39 = 400$	K1 K1 N1	

PERATURAN PEMARKAHAN TAMAT

