



**MODUL PINTAS
TINGKATAN 5**

3472/2

**MATEMATIK TAMBAHAN
Kertas 2**

$2\frac{1}{2}$ jam

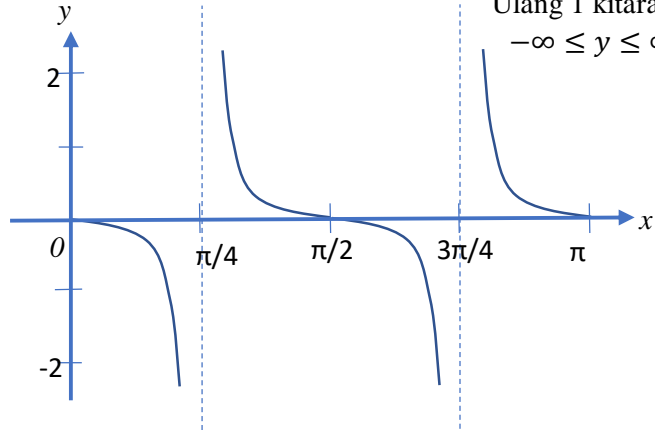
Dua jam tiga puluh minit

**PERATURAN PEMARKAHAN
MATEMATIK TAMBAHAN K2**

3472/2

NO.	PENYELESAIAN	MARKAH		
1.	$(x - 4)(x^2 - x - 2) = 4x - 16$ $(x - 4)(x - 3)(x + 2) = 0$ $x = 4, x = 3, x = -2$ $y = 0, y = -4, y = -24$ $(4, 0),$ $(3, -4),$ $(-2, -24)$	K1		
		K1		
		N1		
		N1	7	7
		N1		
		N1		
		N1		
2.	<p>(a) $\frac{dI}{dt} = 6\pi r^2$ $-0.25 = 6\pi(2)^2 \times \frac{dr}{dt}$ atau setara</p> $\frac{dr}{dt} = -\frac{1}{96\pi}$ atau setara	K1		
		K1	3	
		N1		
	<p>(b) $I = \frac{1}{4}\pi h^3$</p> $\frac{dI}{dh} = \frac{3}{4}\pi h^2$ $-0.25 = \frac{3}{4}\pi(8)^2 \times \frac{dh}{dt}$ atau setara	K1		7
		K1		
		K1	4	
		N1		

NO.	PENYELESAIAN	MARKAH		
3.	(a) $\overline{PR} = \overline{PQ} + \overline{QR}$ $= 8\underline{x} + \frac{3}{4}(24\underline{y})$ $= 8\underline{x} + 18\underline{y}$	K1	2	
	(b) (i) $\overline{PU} = \overline{PT} + \overline{TU}$ $= \frac{2}{3}(24\underline{y}) + (k-1)(8\underline{x})$ $= 8(k-1)\underline{x} + 16\underline{y}$ (ii) $\overline{PU} = \rho\overline{PR}$ $= \rho(8\underline{x} + 18\underline{y})$ $= 8\rho\underline{x} + 18\rho\underline{y}$ $18\rho = 16$ atau $8(k-1) = 8\rho$ $\rho = \frac{8}{9}$ $8(k-1) = 8\left(\frac{8}{9}\right)$ $k = \frac{17}{9}$	K1 N1	8	
4.	(a) $x(1.05) = 79380$ $x = 75600$ $\frac{n}{2}[2(6000) + (n-1)600] = 75600$ $6000n + 300n^2 - 300n = 75600$ $n^2 + 19n - 252 = 0$ $(n-9)(n+28) = 0$ 9 tahun	K1	3	7
	(b) $\frac{10}{2}[2(6000) + (10-1)600]$ $= 87000$ $T_8 = 87000 \times (1.15)^{8-1}$ $T_8 = 231421.73$ $\frac{87000 \times (1.15)^{8-1} - 87000}{87000} \times 100\% \div 18$ $= 9.22\%$	K1 K1 K1 N1		
5.	(a) $\cos 36^\circ = \frac{8}{OA}$ $OA = 9.889 \text{ cm}$	K1	1	
	(b) (i) 9.889×1.257 atau 8×1.257 $9.889 \times 1.257 - 8 \times 1.257$ $= 2.374 \text{ cm}$ (ii) $\frac{1}{2} \times (9.889)^2 \times (1.257 - \sin 72^\circ)$ $\left[\frac{1}{2} \times (9.889)^2 \times (1.257 - \sin 72^\circ) \right] \times 5$ $= 74.80 \text{ cm}^2$	K1 K1 N1 K1 K1 N1	6	7

NO.	PENYELESAIAN	MARKAH		
6.	(a) $(y)^2 = 8\sqrt{y}$ $y^4 = 64y$ $y^3 = 64$ $y = 4$	K1	2	8
	(b) $\int_0^4 (y)^{\frac{1}{2}} dy - \int_0^4 \frac{y^2}{8} dy$ $= \left[\frac{(y)^{\frac{3}{2}}}{\frac{3}{2}} \right]_0^4 - \left[\frac{y^3}{3 \times 8} \right]_0^4$ $= \left[\frac{(4)^{\frac{3}{2}}}{\frac{3}{2}} - \frac{(0)^{\frac{3}{2}}}{\frac{3}{2}} \right] - \left[\frac{4^3}{3 \times 8} - \frac{0^3}{3 \times 8} \right]$ $= \frac{16}{3} - \frac{64}{24}$ $= \frac{8}{3} \text{ unit}^2$	K1 K1 N1	3	
	(c) $\pi \int_0^4 \left(\frac{y^2}{8} \right)^2 dy$ $= \frac{\pi}{64} \left[\frac{y^5}{5} \right]_0^4$ $= \frac{\pi}{64} \left[\frac{4^5}{5} - \frac{0^5}{5} \right]$ $= \frac{16\pi}{5} \text{ unit}^3$	K1 K1 N1	3	
7.	(a) $\frac{2 \sin x \cos x}{-(1-2 \sin^2 x)}$ $= \frac{\sin 2x}{\cos 2x}$	K1 K1	2	6
	(b) (i)  (ii) $p = 0$	P1 P1 P1 N1	4	

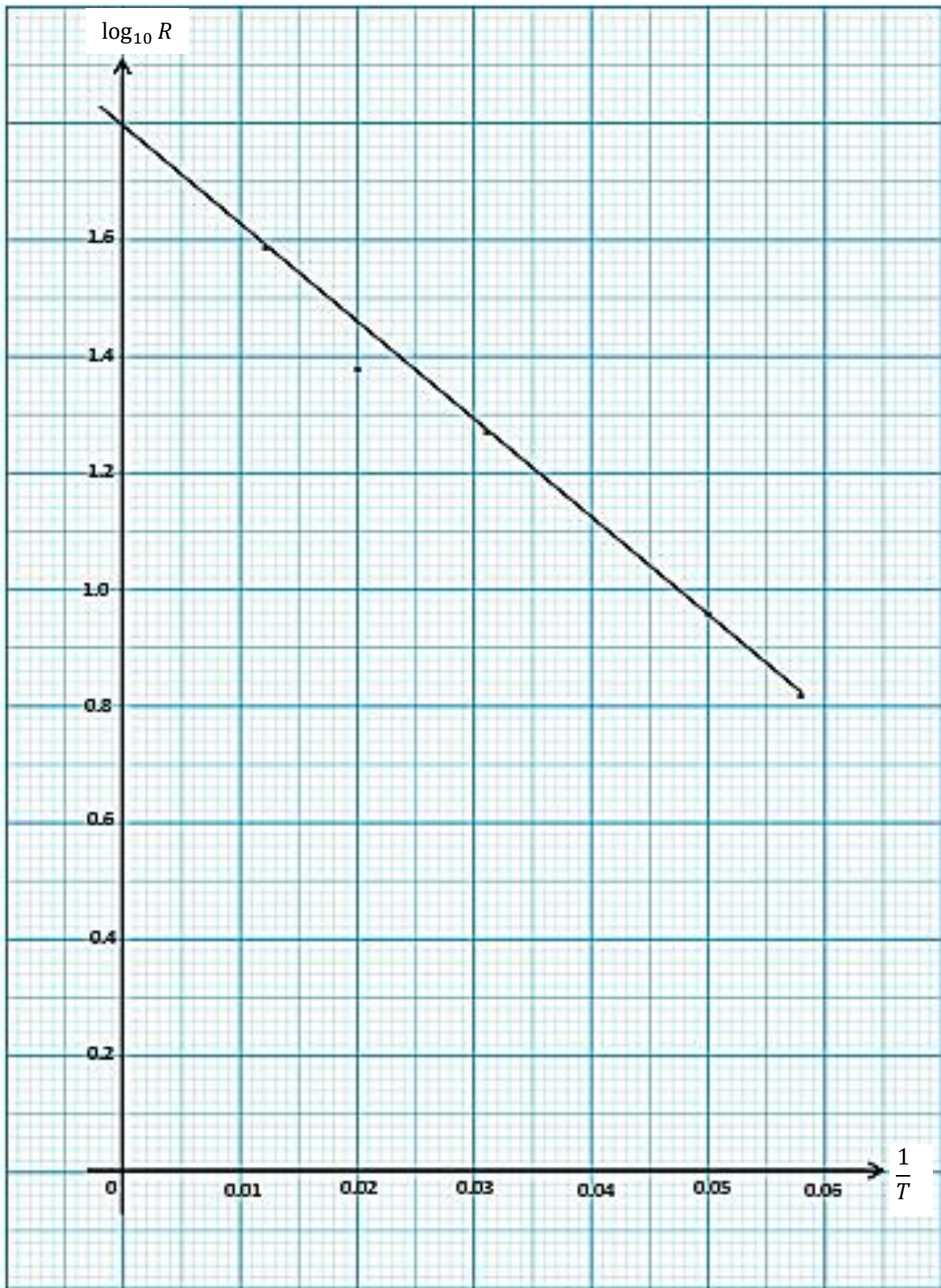
NO.	PENYELESAIAN	MARKAH														
8.	(a) (i) ${}^{10}C_0(0.4)^0(0.6)^{10}$ ATAU ${}^{10}C_1(0.4)^1(0.6)^9$ $1 - {}^{10}C_0(0.4)^0(0.6)^{10} - {}^{10}C_1(0.4)^1(0.6)^9$ $= 0.9536$ (ii) $n(0.4)(0.6) = 192$ $n = 800$	K1	5	10												
	(b) $P\left(\frac{58-65}{6} < Z < \frac{70-65}{6}\right)$ $= 1 - 0.1216 - 0.2025$ $= 0.6759$ $\frac{148}{n} = 0.6759$ $n = 219$	K1 K1 N1 K1 N1			5											
9.	(a) <table border="1" data-bbox="467 751 1097 911"> <tr> <td>$\frac{1}{T}$</td> <td>0.012</td> <td>0.020</td> <td>0.031</td> <td>0.050</td> <td>0.058</td> </tr> <tr> <td>$\log_{10} R$</td> <td>1.59</td> <td>1.38</td> <td>1.28</td> <td>0.96</td> <td>0.82</td> </tr> </table> <ul style="list-style-type: none"> • Plot graf $\log_{10} R$ melawan $\frac{1}{T}$ dengan paksi yang betul, skala seragam dan satu titik diplot dengan tepat • Kelima-lima titik diplot dengan tepat • Garis penyuaian terbaik *Rujuk graf di halaman 9	$\frac{1}{T}$	0.012	0.020	0.031	0.050	0.058	$\log_{10} R$	1.59	1.38	1.28	0.96	0.82	N1 N1 K1 N1 N1	5	10
	$\frac{1}{T}$	0.012	0.020	0.031	0.050	0.058										
	$\log_{10} R$	1.59	1.38	1.28	0.96	0.82										
(b) (b) $\log_{10} R = (-h \log_{10} 2) \left(\frac{1}{T}\right) + \log_{10} k$ $\log_{10} k = 1.8$ atau $-h \log_{10} 2 = \frac{1.8-0.96}{0-0.05}$ $k = 63.1$ $h \approx 55.2 - 55.8$	P1 K1 N1 N1	4														
(c) $R = 28.84$	N1	1														

NO.	PENYELESAIAN	MARKAH		
10.	(a) $\frac{k-1}{h-4} = -\frac{1}{2}$ $h = 6 - 2k$	K1 N1	2	10
	(b) $y - 2(0) = 3$ $y = 3$ $R(0, 3)$ $(0, 3) = \left(\frac{8+h}{3}, \frac{2+k}{3}\right)$ $\frac{8+h}{3} = 0$ atau $\frac{2+k}{3} = 3$ $h = -8$ $k = 7$ $P(-8, 7)$	K1 K1 N1	3	
	(c) Balai polis $\left(-\frac{3}{2}, 0\right)$ $\sqrt{\left(-\frac{3}{2} + 8\right)^2 + (0 - 7)^2}$ $= 9.552 \text{ km}$	N1 K1 N1	3	
	(d) $\frac{1}{2} \left 4(3) + 0 + \left(-\frac{3}{2}\right)(1) - 1(0) - 3\left(-\frac{3}{2}\right) - 0(4) \right $ $= 7.5 \text{ km}^2$	K1 N1	2	
11.	(a) (i) $a = 111$ dan $r = \frac{3}{4}$ $111 \left(\frac{3}{4}\right)^{n-1} < 20$ $n = 7$	P1 K1 N1	5	10
	(ii) $148 + 2\left(\frac{111}{1-0.75}\right)$ $= 1036 \text{ cm}$	K1 N1		
	(b) (i) $S_6 - T_1 = \frac{1.5(1.04^6 - 1)}{1.04 - 1} - 1.5$ $= 8.449 \text{ juta}$	K1 N1		
	(ii) $S_6 - S_3 = \frac{1.5(1.04^6 - 1)}{1.04 - 1} - \frac{1.5(1.04^3 - 1)}{1.04 - 1}$ $= 5.267 \text{ juta}$ Jumlah keuntungan pelaburan $= \frac{19}{100} \times 5.267$ $= 1.001 \text{ juta}$	K1 K1 N1	5	

NO.	PENYELESAIAN	MARKAH		
12.	(a) $v = 3t^2 - 15t + 12$ $3t^2 - 15t + 12 > 0$ $3(t - 1)(t - 4) > 0$ $0 < t < 1$ atau $t > 4$	K1 K1 K1 N1	4	10
	(b) $a = 6t - 15$ $6t - 15 > 0$ $t > \frac{5}{2}$ s	K1 K1 N1	3	
	(c) $\left[t^3 - \frac{15}{2}t^2 + 12t + 10 \right]_1^4$ $\left[4^3 - \frac{15}{2}(4^2) + 12(4) + 10 \right] - \left[1^3 - \frac{15}{2}(1)^2 + 12(1) + 10 \right]$ $= -\frac{27}{2}$ Jarak $AB = \frac{27}{2}$ m	K1 K1 N1	3	
13.	(a) $x + y \leq 60$ $y \geq \frac{2}{3}x$ $y - x \leq 30$	N1 N1 N1	3	10
	(b) <ul style="list-style-type: none"> • Satu garis lurus dilukis dengan betul mengikuti skala yang diberi • Ketiga-tiga garis lurus dilukis dengan betul • Rantau R dilorek dengan tepat *Rujuk graf pada halaman 10	K1 N1 N1	3	
	(c) $K = 120x + 80y$ Titik (36, 24) daripada graf, $120(36) + 80(24)$ $= 6\ 240$ Tidak dapat kekal berniaga kerana yuran yang dikutip tidak cukup untuk membayar sewaan kedai.	N1 K1 N1 N1	4	

NO.	PENYELESAIAN	MARKAH		
14.	(a) $\frac{1}{2}(2.6)(2.6) \sin V = 2.5893$ $V = 50^\circ$ $BC^2 = 2.6^2 + 2.6^2 - 2(2.6)(2.6) \cos 50^\circ$ $BC = 2.198 \text{ m}$	K1	2	10
	(b) $VM = \sqrt{(2.6)^2 - (1.099)^2}$ Nota: M ialah titik tengah BC $VM = 2.356 \text{ m}$ $\frac{VA}{\sin 42^\circ} = \frac{2.356}{\sin 37^\circ}$ $VA = 2.62 \text{ m}$	K1 K1 N1	3	
	(c) $3.2^2 = 2.62^2 + 2.6^2 - 2(2.62)(2.6) \cos V$ ATAU $s = \frac{2.62+2.6+3.2}{2}$ $V = 75.62^\circ$ Luas VAB atau Luas VAC $= \frac{1}{2} \times 2.62 \times 2.6 \times \sin 75.62^\circ$ ATAU Luas VAB atau Luas VAC $= \sqrt{(4.21)(4.21 - 2.6)(4.21 - 3.2)(4.21 - 2.62)}$ Luas = 3.299 m^2 $\frac{1}{2}(h_1)(2.62) = 3.299$ atau $\frac{1}{2}(h_2)(2.62) = 3.299$ Nota: h_1 dan h_2 masing-masing ialah tinggi pada satah VAB dan VAC $h = 2.518 \text{ m}$ $\cos^{-1}\theta = \frac{2.518^2 + 2.518^2 - 2.198^2}{2(2.518)(2.518)}$ 52.76°	K1 K1 K1 K1 N1	5	
15.	(a) (i) $m = \frac{RM60}{RM50} \times 100$ $m = 120$	K1 N1	5	10
	(ii) $(105 \times 3) + (*120 \times 4) + (125 \times 6) + (140 \times n)$ $\frac{(105 \times 3) + (*120 \times 4) + (125 \times 6) + (140 \times n)}{3+4+6+n} = 126.25$ $n = 7$	K1 K1 N1		
	(b) (i) $I_A = 105 \times \frac{110}{100} = 115.5, I_B = 120$ $I_C = 125 \times \frac{115}{100} = 143.75, I_D = 140 \times \frac{105}{100} = 147$ Salah satu daripada I_A, I_C atau I_D betul $\bar{I} = \frac{(115.5 \times 3) + (*120 \times 4) + (143.75 \times 6) + (147 \times 7)}{3+4+6+7}$ $= 135.9$	K1 K1 N1		
	(ii) $\frac{P_{2016}}{RM27} \times 100 = 135.9$ $P_{2016} = RM36.69$	K1 N1		

Graf untuk Soalan 9(a)
Graph for Question 9(a)



Graf untuk Soalan 13(b)
Graph for Question 13(b)

