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**Matematik
Tambahan
Kertas 1**
2 jam
Ogos 2014



**BAHAGIAN PENGURUSAN
SEKOLAH BERASRAMA PENUH DAN SEKOLAH KECEMERLANGAN**

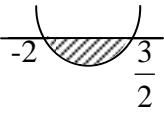
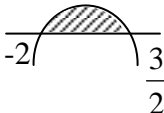
**PENTAKSIRAN DIAGNOSTIK AKADEMIK SBP 2014
PERCUBAAN SIJIL PELAJARAN MALAYSIA**

ADDITIONAL MATHEMATICS

Paper 1

MARKING SCHEME

Skema Pemarkahan ini mengandungi **6** halaman bercetak

No.	Solution and Mark Scheme	Sub Marks	Total Marks
1(a)	$\{-1, 0, 1, 4, 12\}$	1	2
(b)	one-to-many relation or object b has two images	1	
2(a)	3	1	3
(b)	-18 B1 : $\frac{7x}{x-3} = 6$ or $h(x) = \frac{3x}{x-7}$ or $h(x) = \frac{-3x}{7-x}$	2	
3	$f(x) = 2x + 10$ B2 : $f(x) = 6\left[\frac{x+1}{3}\right] + 8$ B1 : $g^{-1}(x) = \frac{x+1}{3}$ OR $f(x) = 2x + 10$ B2 : $f(y) = 6\left[\frac{y+1}{3}\right] + 8$ B1 : $x = \frac{y+1}{3}$	3 3	3
4	$x^2 + 24x + 112 = 0$ B2 : $S.O.R = -24$ or $P.O.R = 112$ B1 : $m+n = -6$ or $mn = 7$	3	3
5	$p = -4$ and $q = -9$ B2 : $p = -4$ or $q = -9$ B1 : $f(x) = -\frac{1}{3}(x+p)^2 - \frac{1}{3}q$	3	3
6	$-2 \leq x \leq \frac{3}{2}$ B2 : $(2x-3)(x+2) \leq 0$ OR  OR  B1 : $2x^2 + x - 6 \leq 0$ OR $-2x^2 - x + 6 \geq 0$	3	3

7	$p = -3$ B2 : $p + 3 = -6p - 18$ B1 : $2^2(2^{p+1}) = \left(\frac{1}{2^3}\right)^{2p+6}$	3	3
8	$x = 6$ B3 : $2x - 5 = x + 1$ B2 : $\log_3(2x - 5)^3 = \log_3(x + 1)^3$ or $\log_3(2x - 5) = \log_3(x + 1)$ B1 : $\frac{\log_3(x + 1)^3}{\log_3 27}$	4	4
9	$S_{20} = 900$ B2 : $S_{20} = \frac{20}{2}[2(7) + 19(4)]$ B1 : $T_1 = a = 4(1) + 3 = 7$ or $d = 4$	3	3
10	RM 284.40 B2 : $T_{12} = 500(0.95)^{11}$ B1 : $r = 0.95 / \frac{19}{20}$	3	3
11	$a = 10$ and $d = 4$ B3 : $a = 10$ or $d = 4$ B2 : $8a + 28d = 192$ and $16a + 120d = 640$ B1 : $S_8 = \frac{8}{2}[2a + 7d] = 192$ or $S_{16} - S_8 = 448$ or $S_{16} = 640$	4	4
12	$y = \frac{x}{-2 + 5x}$ B2 : $\frac{1}{y} = -2\left(\frac{1}{x}\right) + 5$ B1 : $m = -2$ or $c = 5$	3	3

13	$k = -1$ B1 : $5k - 22 = 27$ or $5k - 22 = -27$ B1 : $\frac{1}{2} (3k - 10 + 4) - (10 + 6 - 2k) = 13.5$	3	3
14	$y = \frac{1}{2}x - 4$ or equivalent B3 : $y - 0 = \frac{1}{2}(x - 8)$ B2 : $R(8,0)$ and $m_2 = \frac{1}{2}$ B1 : $R(8,0)$ or $m_2 = \frac{1}{2}$	4	4
15(a)	$3p + 2r$	1	2
(b)	$\sqrt{53}$	1	
16(a)	$h = 5$	2	4
(b)	$B1 : 3 = \frac{1}{2}(h + 1)$ $\frac{1}{\sqrt{10}} \begin{pmatrix} 1 \\ 3 \end{pmatrix}$, accept $\frac{1}{\sqrt{40}} \begin{pmatrix} 2 \\ 6 \end{pmatrix}$ $B1 : \sqrt{2^2 + 6^2}$	2	
17	13.72 B3 : $\frac{1}{2}(7)^2(1.143) - \frac{1}{2}(5)^2(1.143)$ B2 : $\frac{1}{2}(7)^2(1.143)$ or $\frac{1}{2}(5)^2(1.143)$ B1 : 1.143 rad	4	4

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18(a)	$\cot \theta = -\frac{h}{\sqrt{1-h^2}}$ $\text{B1 : } \frac{\sqrt{1-h^2}}{h}$	2	3
(b)	$-2h\sqrt{1-h^2}$	1	
19	$\text{B2 : } \frac{1}{3} \left[\frac{3(1)^2 - 4}{1} \right] - \frac{1}{3} \left[\frac{3(-2)^2 - 4}{-2} \right] \quad \text{OR} \quad \text{B2 : } \left[x + \frac{4x^{-1}}{-3} \right]_{-2}^1$ $\text{B1 : } \frac{1}{3} \int_{-2}^1 3h(x) dx \quad \text{B1 : } h(x) = \frac{1}{3}(3 + 4x^{-2})$	3	3
20(a)	$\frac{2}{3}$ $\text{B1 : } 6x - 4 = 0$	2	3
(b)	$\frac{11}{3}$	1	
21	$\text{B2 : } \left[\frac{kx^2}{2} \right]_1^3 - 2(-5) = 18$ $\text{B1 : } \frac{kx^2}{2} \text{ or } -10$	3	3
22(a)	225 $\text{B1 : } \frac{\sum x^2}{5} - (6)^2 = 3^2$	2	3
(b)	36	1	

23	72 B2 : $5! - 2! \times 4!$ B1 : $5!$ or $2! \times 4!$		3
24(a)	12 B1 : $\frac{h}{h+3} = \frac{4}{5}$	2	4
(b)	$\frac{13}{28}$ [accept $\frac{26}{56}$] B1 : $\frac{3}{8} \times \frac{2}{7}$ or $\frac{5}{8} \times \frac{4}{7}$	2	
25(a)	0.1506	1	4
(b)	52.381 B2 : $1.034 = \frac{56 - \mu}{3.5}$ B1 : 1.034	3	