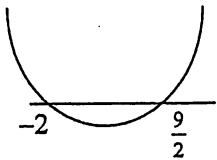


PROGRAM PENINGKATAN PRESTASI AKADEMIK SPM 2013

Marking Scheme
Additional Mathematics Paper 1

Question	Solution/ Marking Scheme	Answer	Marks
1		(a) 2 (b) many-to-one	1 1
2	(b) B1: $4-3(x-3)$ or $\frac{4-g}{3}=x-3$	(a) -5 (b) $13-3x$	1 2
3	(b) $f(k)=11$ or $2k+3=11$	(a) 7 (b) 4	1 2
4	B2: $5+8q>0$ B1: $(-1)^2-4(1+2q)(-1)>0$	$q>-\frac{5}{8}$	3
5	B2: $(2x-9)(x+2)\geq 0$  or $x=\frac{9}{2}$, $x=-2$ $x^2-9\geq \frac{5x}{2}$ B1: or $2x^2-5x-18\geq 0$	$x\leq -2$ $x\geq \frac{9}{2}$	3
6	B1: $-5=p(0-1)^2-3$	(a) $p=-2$ $r=-3$ (b) $x=1$	2 1 1

7	B3: $3x=2$ B2: $2^{3x}(16-4)=48$ B1: 2^2 or 4	$\frac{2}{3}$	4
8	B2: $-55+(n-1)7>100$ B1: $a=-55$ and $d=7$	$n=24$	3
9	B2: $\frac{5}{2}(2a+4d)=a+7d$ or $\frac{5}{2}(2(-3)+4d)=-3+7d$ B1: $S_3=\frac{5}{2}(2a+4d)$ or $T_3=a+7d$	6	3
10	B1: $\frac{2}{1-r}=\frac{3}{2}$	$r=-\frac{1}{3}$	2
11	B3: $y=2^{x+3}$ B2: $\log_2 y=x+3$ B1: Gradient = 1 or $c=3$	$8(2^x)$	4
(a)	B1: $0=-2(6)+c$ or $c=12$	(a) $y=-6x+12$	2
(b)	B1: $\frac{5(0)+1(6)}{1+5}$ or $\frac{5(12)+1(0)}{1+5}$	(b) $Q(1, 10)$	2
B2: $\log_2 P=6$ B1: $\frac{\log_2 P}{\log_2 4}$ or $\frac{\log_2 P}{2}$ or $3\log_3 P$	64	3	
B2: $\frac{1}{2}[(0-10-1-9)-(15+0+6-2)]$ B1: $(0-10-1-9)$ or $(15+0+6-2)$	$\frac{39}{2}$	3	

ANY ORDER PLEASE CONTACT:
TEL: 09-5687136
HP: 016-9310896

Question	Solution/ Marking Scheme	Answer	Marks
15	B1: $\overline{AB} = \overline{AO} + \overline{OB}$	(a) $\begin{pmatrix} 12 \\ 9 \end{pmatrix}$ (b) $-8\mathbf{i} - 10\mathbf{j}$	1 2
-16	B2: $\overline{OR} = \underline{a} + \underline{b} - \frac{1}{2}\underline{a}$ B1: $\overline{PQ} = \overline{PO} + \overline{OQ}$ or $\overline{PQ} = 2\underline{b} - \underline{a}$ or $\overline{OR} = \overline{OP} + \frac{1}{2}\overline{OQ}$	$\frac{1}{2}\underline{a} + \underline{b}$	3
17	(b) B1: $\frac{3+5+8+m+n+25+27+28}{8} = 16$	(a) 25 (b) 32 (c) 16	1 2 1
18	B1: $\lim_{x \rightarrow -3} \left(\frac{(x+3)(x-3)}{x+3} \right)$	-6	2
19	(a) B1: $OP \times 1.344 = 6.72$ (b) B1: $5 + 5 + 6.72$	(a) $r = 5$ (b) 16.72	2 2
20	(b) B2: $\sin 2\theta = 2 \left(\frac{12}{13} \right) \left(-\frac{5}{13} \right)$ B1: $-\frac{5}{13}$	(a) $\cot \theta = -\frac{5}{12}$ $-\frac{120}{169}$	1 3

Question	Solution/ Marking Scheme	Answer	Marks
21	B2: $[2(2)^2 - \frac{3}{2}] - [2(1)^2 - 3]$ B1: $\left(2x^2 - \frac{3}{x} \right)$	8.5 or $8\frac{1}{2}$ or $\frac{17}{2}$	3
22	(a) B1: 7P_6 or $7 \times 6 \times 5 \times 4 \times 3 \times 2$ (b) B1: $2 \times {}^6P_5$ or $2 \times 6 \times 5 \times 4 \times 3 \times 2$	(a) 5040 (b) 1440	2 2
23	B2: $[4(2) - 10] \times 4$ B1: $\frac{dy}{dx} = 4x - 10$	-8	3
24	B2: $1 - \left(\frac{3}{5} \right)^3$ or $1 - \left(\frac{3}{5} \times \frac{3}{5} \times \frac{3}{5} \right)$ B1: $\left(\frac{2}{5} \times \frac{3}{5} \times \frac{3}{5} \right)$ or $\left(\frac{2}{5} \times \frac{2}{5} \times \frac{3}{5} \right)$ or $\left(\frac{2}{5} \times \frac{2}{5} \times \frac{2}{5} \right)$	$\frac{98}{125}$	3
25	B2: $\frac{6.5 - \mu}{0.6} = 0.807$ B1: $P \left(z > \frac{6.5 - \mu}{\sqrt{0.36}} \right) = 0.21$	$\mu = 6.02$	3

END OF MARKING SCHEME