MOZ@C

**Matematik
Tambahan
Kertas 1
Peraturan
Pemarkahan
Percubaan
SPM
September
2008**

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PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA 2008

MATEMATIK TAMBAHAN

Kertas 1

PERATURAN PEMARKAHAN

UNTUK KEGUNAAN PEMERIKSA SAHAJA

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NO	ANSWER	MARKS
1	(a) $3 + \dfrac{6}{2k-1}$ $\dfrac{6k-3+6}{2k-1}$ $\dfrac{6k+3}{2k-1}$ $\dfrac{3(2k+1)}{2k-1}$	(1)
	(b) $[\,x\,] = -1$	(2)
	$3 + \dfrac{6}{x-1} = 0$	B1
2	$x^2 + 5$	(3)
	$16\left(\dfrac{x-3}{4}\right)^2 + 24\left(\dfrac{x-3}{4}\right) + 14$ or $16\left(\dfrac{y-3}{4}\right)^2 + 24\left(\dfrac{y-3}{4}\right) + 14$ or $(4x+3)^2 + 5$	B2
	$g^{-1}(x) = \dfrac{x-3}{4}$ or $x = \dfrac{y-3}{4}$	B1
3	5	(2)
	$(30)^2 - 4p(45) = 0$ or $\left(\dfrac{-30}{2p}\right)^2 = \dfrac{45}{p}$	B1
4	(a) $r = -\dfrac{3}{2}$, $p = -\dfrac{25}{4}$	(3)
	$r = -\dfrac{3}{2}$ or $p = -\dfrac{25}{4}$ or $-(x+\dfrac{3}{2})^2 - \dfrac{25}{4}$	B2
	$(-4, 0)$ $(1, 0)$ $0 = p + (-4-r)^2$ & $0 = p + (1-r)^2$ or $\dfrac{-4+1}{2}$ or $y = x^2 + 3x - 4$	B1
5	$\dfrac{-7}{2} < x < 2$	(3)
	$(2x+7)(x-2)$ or $-\dfrac{7}{2}, 2$ seen or $\dfrac{-3 \pm \sqrt{3^2 - 4(2)(-14)}}{2(4)}$	B2
	$2x^2 + 3x - 14 < 0$	B1

6	$1 + 2a = 3b$ or equivalent	(3)
	$\left[2(4^a) = 8^b\right]$ OR $\left[\log_2 y = 2a \text{ and } 1 + \log_2 y = 3b\right]$ OR $\left[\log_x 2 + 2a \log_x 2 = 3b \log_x 2\right]$	B2
	$\left(y = 4^a \text{ and } 2y = 8^b\right)$ OR $\left(\log_x y = a \log_x 4 \text{ and } \log_x 2 + \log_x y = b \log_x 8\right)$ OR $\left(\dfrac{\log_2 y}{\log_2 2^2} = a \text{ and } \dfrac{\log_2 2y}{\log_2 8} = b\right)$ OR $\left(\log_8 2(4^a) = b\right)$ OR $\left(\log_4\left(\dfrac{8^b}{2}\right) = a\right)$	B1
	note : x = any base	
7	$x = 3$	(3)
	$1 + x = 4$ or $3 \cdot 3^x = 3^4$ or equivalent	B2
	$2 \cdot 3^x + 3^x = 81$ or $6\left(\dfrac{3^x}{3}\right) = 3^4 - 3^x$	B1
8	$k = \dfrac{1}{3}$ OR $0.333333\ldots$	(4)
	$9k^2 = 1$ OR $\log k = -0.4771$ OR $k^2 = 0.11111\ldots$	B3
	$\log_5 9k^2 = 0$ OR $\dfrac{0.9542}{0.6990} + \dfrac{2\log k}{0.6990} = 0$ OR $1.365 + 2.861 \log k = 0$ OR $1.365 + \log_5 k^2 = 0$	B2
	$\log_5 9 + \log_5 k^2 = 0$ OR $\dfrac{\log 9}{\log 5} + \dfrac{2\log k}{\log 5} = 0$	B1
9	$r = \dfrac{2}{3}$ and $x = 52$	(3)
	$r = \dfrac{2}{3}$ or $x = 52$	B2
	$\dfrac{x-20}{x-4} = \dfrac{x-4}{x+20}$	B1
10	$S_n = \dfrac{n}{2}\{5n + 35\}$ or equivalent $5n\left(\dfrac{7+n}{2}\right)$	(3)
	$\dfrac{n}{2}\{20 + 15 + 5n\}$ or $\dfrac{n}{2}\{2(20) + (n-1)5\}$	B2
	$a = 20$, $d = 5$	B1

11	b = 3 and a = 2	(3)
	b = 3 or a = 2	B2
	$y = ab + \dfrac{b}{x}$ OR $y = 3\left(\dfrac{1}{x}\right) + 6$ OR $y\sqrt{x} = \dfrac{3}{\sqrt{x}} + 6\sqrt{x}$	B1
12	$p = \dfrac{22 - 4q}{3}$	(3)
	$\dfrac{1-4}{6-2} = \dfrac{q-1}{p-6}$ OR $\dfrac{1-4}{6-2} = \dfrac{q-4}{p-2}$ OR $\dfrac{q-1}{p-6} = \dfrac{q-4}{p-2}$ OR *equivalent* OR $\dfrac{1}{2}\big((2(1) + 6q + 4p) - (4(6) + 1(p) + 2q)\big) = 0$	B2
	$\dfrac{1-4}{6-2}$ OR $\dfrac{q-1}{p-6}$ OR $\dfrac{q-4}{p-2}$ OR $-\dfrac{3}{4}$ OR $\dfrac{1}{2}\big((2(1) + 6q + 4p) - (4(6) + 1(p) + 2q)\big)$ OR $\begin{pmatrix} -3 \\ 4 \end{pmatrix} = \lambda \begin{pmatrix} q-1 \\ p-6 \end{pmatrix}$ OR equivalent	B1
13	$p = \dfrac{15}{7}, 3$ 2.143	(3)
	$7p^2 - 36p + 45 = 0$	B2
	$\sqrt{(3p)^2 + p^2} = \sqrt{(p-6)^2 + (3-4p)^2}$ OR equivalent	B1
14	$\dfrac{\begin{pmatrix} 10 \\ 13 \end{pmatrix}}{\sqrt{269}}$ OR $\dfrac{10i + 13j}{\sqrt{269}}$	(3)
	$\sqrt{269}$ OR 16.40 OR 16.4	B2
	$10\underset{\sim}{i} + 13\underset{\sim}{j}$	B1
15	k = -2 , 3	(3)
	$h + 1 = -2\left(\dfrac{-2}{h-2}\right)$ OR equivalent	B2
	$h + 1 = -2m$ and $-2 = m(h-2)$ OR equivalent	B1

16	$\sqrt{\dfrac{1-m}{2}}$	(3)
	$m = 1 - 2\sin^2\dfrac{\theta}{2}$	B2
	$\cos\theta = 1 - \sin^2\dfrac{\theta}{2}$	B1
17	$x = 0^0, 120^0, 180^0, 240^0, 360^0$	(3)
		B2
	$0^0, 180^0, 360^0$ or $120^0, 240^0$	
		B1
	$\sin x + 2\sin x\cos x = 0$	
18	$\dfrac{\pi-2}{2}$ or equivalent	(4)
		B3
	$\pi - \alpha = \alpha + 2$ or equivalent	
		B2
	$\pi r - r\alpha = r\alpha + 2r$ or equivalent	
	$\pi r - r\alpha$ or $r\alpha + 2r$ or $\dfrac{\pi-\alpha}{2}$ or (if $\angle COD = \theta$) $\alpha = \pi - 2\theta$	B1
	$\text{m } AB +$ per. OBC $\angle AOB$ or COD	
	CD	
19	$(0, 4)$ and $(3, -23)$	(3)
	$x = 0$, $x = 3$	B2
	$6x^2 - 18x$	B1
20	$\sqrt{2}$ or 1.414	(4)
	$\dfrac{t^4}{4} - \dfrac{t^2}{2} + \dfrac{1}{4}$ or equivalent	B3
	$\left[\dfrac{x^4}{4} - \dfrac{x^2}{2}\right]$	B2
	$x^3 - x$	B1

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21	a) $-\dfrac{4}{3}$	(1)
	b) h = 6	(3)
	$\dfrac{2}{3}(4)+\dfrac{h(2)^2}{2}-\dfrac{h(1)^2}{2}=\dfrac{35}{3}$	B2
	$\dfrac{2}{3}(4)$ OR $\dfrac{hx^2}{2}$	B1
22	(a) 241920	(2)
	8 !.3 !	B1
	(b) 2903040	(2)
	10 ! – 9 !.2 ! or equivalent	B1
23	(a) 252	(2) ·
	$^{10}C_5$	B1
	(b) 186	(2)
	$^6C_5.{}^4C_0+{}^6C_4.{}^4C_1+{}^6C_3.{}^4C_2$	B1
24	k = 4	(3)
	$\dfrac{4}{12}.\dfrac{2}{k+2}+\dfrac{8}{12}.\dfrac{k}{k+2}=\dfrac{5}{9}$	B2
	$\dfrac{4}{12}.\dfrac{2}{k+2}$ or $\dfrac{8}{12}.\dfrac{k}{k+2}$	B1
25	$t=\dfrac{2}{5}$ and $n=150$	(3)
	$t=\dfrac{2}{5}$ or $n=150$	B2
	$nt = 60$ and $\sqrt{nt(1-t)}=6$ OR equivalent	B1

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1. $x = 4$, $x = -19/2$
    $y = -1$ $y = 8$

2. a) 61.32

    b) 19.8326

3. a) $n = 7$

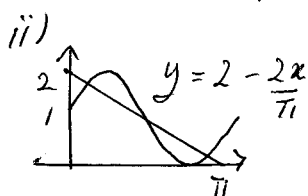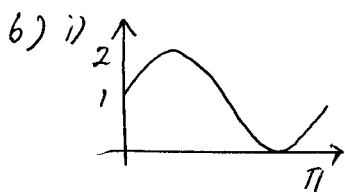   b) $16/11$

5. a) 4

    b) $24 \frac{8}{21} \pi$ or 24.38π

6. a) 258.89

    b) 367.09

4. a) i) $10x - 2y$
        ii) $(m+4)x - 3y$

    b) $m = 11$

7. b) i) $0.58 \leq m \leq 0.62$
        ii) $190.5 \leq k \leq 208.9$

8. a)
    b) i)

    ii)

    $y = 2 - \frac{2x}{\pi}$

    number of solutions = 3

9. a) i) $(3, 5)$

       ii) $y = \frac{1}{3}x + 4$

       iii $p = 4$

    b) i) $(9, 7)$

       ii) 30

10. a) $\frac{1}{2}k^2(5-k)$

    b) 0.08

    c) $10/3$

        $A_{max} = 250/27$

11. a) i) 0.2097
       ii) 0.8520

    b) i) 0.73401

       ii) 31 or 32

12. a) $55.15°$ or $55°9'$

    b) 5.87

    c) 14.56

13. a) $8x + 4y \geq 280$
        $5x + 5y \leq 350$
        $x \leq 3y$

    b)
    c) i) 40 ii) $(30, 10)$
                        RM 6900

14. a) $t = 3$
    b) $16 \frac{1}{3}$
    c) 36

15. a) i) ~~RM 930~~ 186
       ii) 130
    b) 769