

SULIT
3472/2 (PP)
Matematik
Tambahan
Peraturan
Pemarkahan
Mei 2012



JABATAN PELAJARAN NEGERI TERENGGANU

PEPERIKSAAN
PERTENGAHAN TAHUN 2012
TINGKATAN 4

MATEMATIK TAMBAHAN

KERTAS 2

PERATURAN PEMARKAHAN

Peraturan pemarkahan ini mengandungi 9 halaman bercetak.

INSTRUCTIONS FOR EXAMINERS

1. MARKING GUIDE

- 1.1 Mark all the answers.
- 1.2 Do not mark working / answer that has been cancelled.
- 1.3 Give the mark P / K / N in line with steps of calculation given by the students.
- 1.4 Give the mark P0 / K0 / N0 for the incorrect working / answer.
- 1.5 If more than one final answer is given, mark all the solution and choose the answer with the highest mark.
- 1.6 Accept other correct methods which are not given in the marking scheme.

2. NOTATION

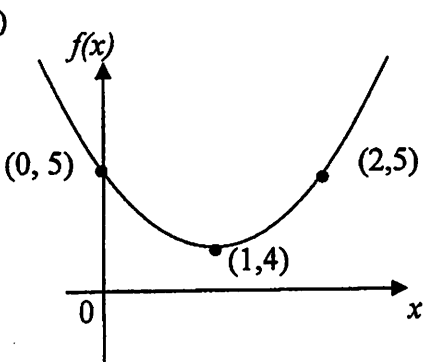
- P** – The mark is given if the working / answer in accordance with the **Knowledge** assessed as stated in the marking scheme.
- K** – The mark is given if the working / answer in accordance with the **Skills** assessed as stated in the marking scheme.
- N** – The mark is given if the working / answer in accordance with the **Values** assessed as stated in the marking scheme.
- PA** – Subtract 1 mark (only once) from the N mark when students make an early rounding of numbers.
- KP** – Subtract 1 mark (only once) from the P mark or N mark when students do not write the important steps of the calculations.
3. Accept answers correct to 4 significant figures unless stated otherwise in the marking scheme.
 4. Accept other correct methods which are not given in the marking scheme.
 5. Accept answers in Bahasa Melayu.
 6. Calculating total marks.

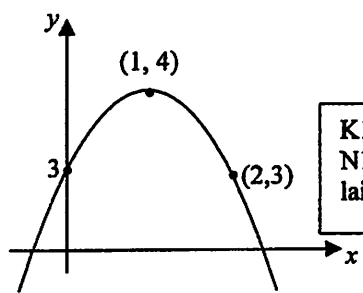
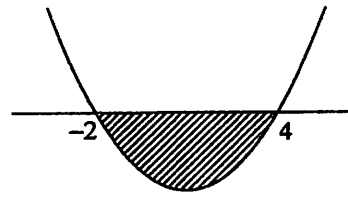
$$\frac{\sum \text{Score for Paper 1} + \sum \text{Score for Paper 2}}{160} \times 100\%$$

PEPERIKSAAN PERTENGAHAN TAHUN TINGKATAN 4 TAHUN 2012
PERATURAN PEMARKAHAN MATEMATIK TAMBAHAN KERTAS 2

SECTION A [30 MARKS]		
No.	MARK SCHEME	Σ MARK
1	$x = 5 - 2y$ $(5 - 2y)^2 + y^2 = 10$ $5y^2 - 20y + 15 = 0$ $(y - 3)(y - 1) = 0$ atau $y = \frac{-(-20) \pm \sqrt{(-20)^2 - 4(5)(15)}}{2(5)}$ $y = 3, y = 1$ $x = -1, x = 3$ ATAU $y = \frac{5 - x}{2}$ $x^2 + \left(\frac{5 - x}{2}\right)^2 = 10$ $5x^2 - 10x - 15 = 0$ $(x + 1)(x - 3) = 0$ atau $x = \frac{-(-10) \pm \sqrt{(-10)^2 - 4(5)(-15)}}{2(5)}$ $x = -1, x = 3$ $y = 3, y = 1$	P1 K1 K1 N1 N1 5

2	$y = 2 - 3x$ $3x^2 + (2 - 3x)^2 + x(2 - 3x) = 6$ $9x^2 - 10x - 2 = 0$ $x = \frac{-(-10) \pm \sqrt{(-10)^2 - 4(9)(-2)}}{2(9)}$ $x = 1.284 \qquad x = -0.173$ $y = -1.852 \qquad y = 2.519$ <p>(terima $y = -1.853$)</p> <p>ATAU</p> $x = \frac{2 - y}{3}$ $3\left(\frac{2 - y}{3}\right)^2 + y^2 + \left(\frac{2 - y}{3}\right)y = 6$ $3y^2 - 2y - 14 = 0$ $y = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(3)(-14)}}{2(3)}$ $y = -1.852 \qquad y = 2.519$ $x = 1.284 \qquad x = -0.173$	<p>P1 K1 K1 N1 N1</p> <p style="text-align: center;">5</p>
3	<p>(a) $h = 3$ N1</p> <p>(b) $x = \frac{5 + 3y}{y}$ K1</p> <p>$g(x) = \frac{5 + 3x}{x}, x \neq 0$ N1</p> <p>(c) $\frac{5 + 3x}{x} = 2$ K1</p> <p>$x = -5$ N1</p>	<p style="text-align: center;">5</p>
4	<p>(a) $(x - 2)(x + 3) = 0$ K1</p> $x^2 + x - 6 = 0$ <p>Compare with $3x^2 + px + q = 0$</p> $\frac{p}{3} = 1 \text{ or } \frac{q}{3} = -6$ $p = 3 \quad q = -18$ <p>(b) $(3)^2 - 4(3)(-18 + 3k) < 0$ K1</p> $k > \frac{25}{4}$ N1	<p style="text-align: center;">5</p>

5	<p>(a) $\left[x + \left(\frac{-2}{2}\right)\right]^2 + k - \left(\frac{-2}{2}\right)^2$</p> <p style="text-align: center;">$k - 1 = 4$ $k = 5$</p> <p>(b) </p> <p style="margin-left: 200px;">K1 for the shape (minimum) N1 for passing thro' (1, 4) and any other 2 points.</p>	5
6	<p>(a) $2^{2x+1-x+2x-2}$</p> <p style="margin-left: 100px;">2^{3x-1}</p> <p>(b) (i) $\log_2 \frac{x^3(x+1)}{x^4}$</p> <p style="margin-left: 100px;">$\frac{x+1}{x} = 2$</p> <p style="margin-left: 100px;">$x = 1$</p>	5

<p>7</p>	<p>(a) $2(5) + m = 6$, $\frac{n}{(6)-4} = -3$ K1 $m = 6 - 10$, $n = -3(2)$ K1 $m = -4$, $n = -6$ N1N1</p> <p>(b) $gf(x) = g(2x - 4)$ P1 $= \frac{-6}{(2x-4)-4}$ K1 $= \frac{-6}{2x-8}$ or $\frac{-3}{x-4}$ or $\frac{3}{4-x}$, $x \neq 4$ N1</p> <p>(c) $\frac{-6}{2x-8} = x$ K1 $2x^2 - 8x + 6 = 0$ K1 $(x-3)(x-1) = 0$ N1 $x = 3$, $x = 1$</p>	<p>10</p>
<p>8</p>	<p>(a) $f(x) = -1\left(x - \frac{2}{2}\right)^2 + 3 - \left(\frac{4}{-4}\right)$ K1 $-1(x-1)^2 + 4$ N1 $a = -1$, $p = -1$, $q = 4$ N2,1,0</p> <p>(b) nilai maksimum = 4 N1 $x = 1$ N1</p> <p>(c)  <div style="border: 1px solid black; padding: 5px; display: inline-block;"> K1 untuk bentuk maksimum N1 untuk melalui titik(1,4) dan 2 titik lain </div></p> <p>(d) $3 + 2x - x^2 \geq -5$ $x^2 - 2x - 8 \leq 0$ $x = 4, -2$</p>  <p style="text-align: center;">$-2 \leq x \leq 4$</p> <p style="text-align: right;">K1 (termasuk lorekan) N1</p>	<p>10</p>

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9	(a)	(i)	$3^{4x} = 3^{x-3}$	K1	10
			$x = -1$	N1	
	(ii)		$3^{2x-2} = 3^4$	K1	
			$x = 3$	N1	
	(b)	(i)	$2 \log_a 2$	K1	
			$2m$	N1	
	(ii)		$\log_a 9 + \log_a a^2$	K1	
			$2n + 2$	N1	
(ii)		$\log_a 9 - \log_a 2$	K1		
		$2n - m$	N1		

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10	<p>(a) Area $\Delta_{OAB} = \frac{1}{2} \begin{vmatrix} 0 & -4 & 3 & 0 \\ 0 & 5 & 2 & 0 \end{vmatrix}$</p> <p style="text-align: right;">K1</p> $= \frac{1}{2} [(0 - 8 + 0) - (0 + 15 + 0)]$ $= \frac{1}{2} [(-8) - (15)]$ $= \frac{1}{2} [23] = 11\frac{1}{2} \text{ unit}^2 \text{ or } 11.5 \text{ unit}^2$ <p style="text-align: right;">N1</p> <p>(b) = $\left(\frac{2(-4)+1(3)}{3}, \frac{2(5)+1(2)}{3} \right)$</p> <p style="text-align: right;">K1</p> $\left(\frac{-8+3}{3}, \frac{10+2}{3} \right) = \left(-\frac{5}{3}, 4 \right)$ <p style="text-align: right;">N1</p> <p>(c) gradient of the perpendicular line = $\frac{7}{3}$</p> <p style="text-align: right;">P1</p> $y - 4 = \frac{7}{3} \left(x + \frac{5}{3} \right)$ <p style="text-align: right;">K1</p> $y = \frac{7}{3}x + \frac{35}{9} + 4$ $y = \frac{7}{3}x + \frac{71}{9} \text{ or } 9y = 21x + 71 \text{ or equivalent}$ <p style="text-align: right;">N1</p> <p>(d) $\sqrt{(x+4)^2 + (y-5)^2} = 5$</p> <p style="text-align: right;">P1</p> $x^2 + 8x + 16 + y^2 - 10y + 25 = 25$ <p style="text-align: right;">K1</p> $x^2 + y^2 + 8x - 10y + 16 = 0$ <p style="text-align: right;">N1</p>	10
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11	(a) $f(x) = 1\left(x + \frac{(m-2)}{2}\right)^2 + 8 - \frac{(m-2)^2}{4}$	K1N1	10
	$\frac{m-2}{2} = -3$	K1	
	$m = -4$	N1	
	(b) $x^2 - 6x + \frac{32-k}{4} = 0$	K1	
	$\alpha + \beta = 6$	P1	
	$\alpha\beta = \frac{32-k}{4}$	P1	
	$\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta$	P1	
	$4 = 6^2 - 2\left(\frac{32-k}{4}\right)$	K1	
	$k = -32$	N1	

END OF MARK SCHEME