Soalan 1

(a) {(1, p), (2, r), (3, s), (4, p)} √ 1

Terima : * Pasangan dalam sebarang braket, objek dan imej mesti dipisahkan dengan tanda koma.

* Pasangan tertib itu boleh dalam sebarang tertib susunan.

Soalan 1 (...samb.)

(b) many to one / banyak kepada satu √ 1

* BM/BI atau bercampur

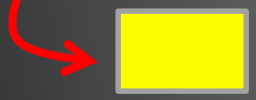
(c) { p, r, s } √ 1 * dilihat dalam satu kumpulan

Soalan 2

(a) $\frac{x-1}{2}$ or $\frac{x}{2} - \frac{1}{2}$ or $\frac{1-x}{-2}$ √ 1

Terima sebarang huruf kecuali 'g' & 'h'

Abaikan semua objek di sebelah kiri

 $= \frac{x-1}{2}$

(b) 18 √ 2 $3*(\frac{x-1}{2}) + 6$ or $*4$ √ M1

OR $*(\frac{9-1}{2})$ * = follow through

Soalan 3

½ or 0.5 √ 3

$\frac{10 - 8}{3(10 - 8) - 2}$ or $\frac{2}{3(2) - 1}$ √ M2

$\frac{x - 8}{3(x - 8) - 2}$ OR $10 - 8$ OR $\frac{g(10)}{3g(10) - 2}$ √M1

Soalan 4

(a) - 1, 3 (kedua-duanya) √ 1

Terima kes: f(x) = 0, f(3) = 0,

f(- 1) = 0

maka f = - 1, 3 √ 1

(b) x = 1 or x – 1 = 0 √ 2

$\frac{-1+3}{2}$ √ M1

Soalan 5

$p > 1/10$ or $p > 0.1,\ p \neq 1$ √ 3

<u>Terima</u> jika tiada $p \neq 1$

$(-6)^2 - 4(1-p)(10) > 0$ or √ M2

$6^2 - 4(1-p)(10) > 0$ or

$-6^2 - 4(1-p)(10) > 0$ or

$\left(\frac{-6}{1-p}\right)^2 - 4(1)\left(\frac{10}{1-p}\right) > 0$ or √ M2

$\left(\frac{6}{1-p}\right)^2 - 4(1)\left(\frac{6}{1-p}\right) > 0$

Soalan 5 (… samb.)

$(-6)^2 - 4(1-p)(10)$ OR $p \neq 1$ √ M1

Terima: $6^2 - 4(1-p)(10)$ or √ M1

$\left(\frac{-6}{1-p}\right)^2 - 4(1)(10)$ or

$\left(\frac{-6}{1-p}\right)^2 - 4(1)(10)$

Tolak: $-36 - 40 + 4p > 0$ sebab?

Soalan 6

(a) 1 √ 2

$k - 4 = -3$ or $-4 + k = -3$ √ M1

OR $-(x - \frac{4}{2})^2 + (\frac{-4}{2})^2 - 3$

OR $-(x - 2)^2 + (-2)^2 - 3$

OR $-3 = -(0 - 2)^2 + k$

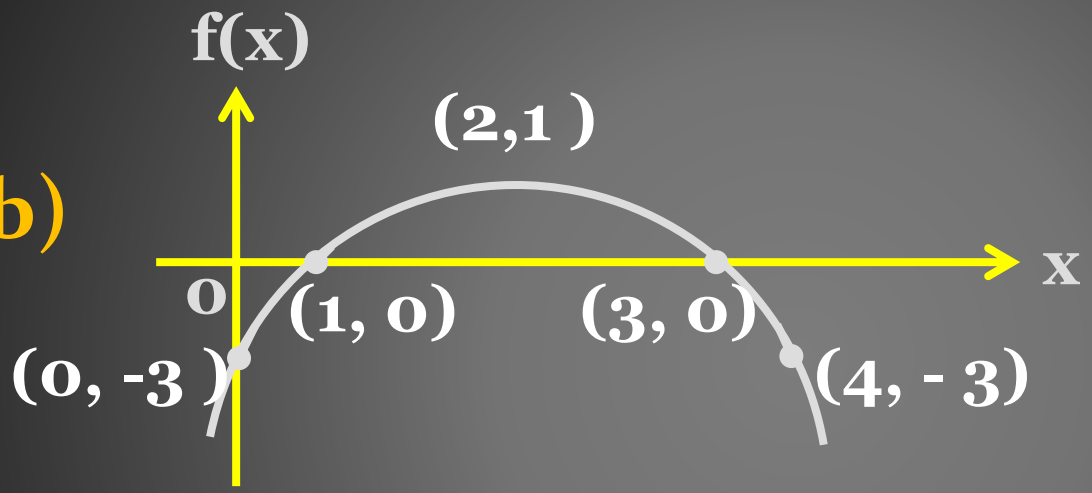
OR $\frac{-4^2}{4(-1)} - 3$

kes: $-2[(x - 2)^2 - 1]$ M0

$-2(x - 2)^2 + 1$ √ M1

Soalan 6 (… samb)

(b)



Bentuk graf ∩ melalui mana-mana dua titik yang betul pada graf itu. √ 2

Bentuk graf ∩ √ M1

Soalan 7

– 2 √ 3

$3^{x} = 3^{-2}$ OR $3^{x+2} = 3^{0}$ √ M2

OR sebarang persamaan indeks yang betul daripada persamaan yang diberi.

$3^{2}(3^{0}) - (3^{x})$ or $9(3^{x} \cdot 3^{2})^{2} - 9(3^{x})$ √ M1

$9(3^{x+2}) - 3^{2+2}$ or $3^{x} \cdot 3^{4} - 3^{x} \cdot 3^{2}$ √ M1

Soalan 8

$\frac{2a + b}{3}$ or $\frac{2a}{3} + \frac{b}{3}$ √ 3

√ M2

$\frac{2\log_2 3 + \log_2 5}{3}$ OR $\frac{2\log_2 3}{3} + \frac{\log_2 5}{3}$ OR

$\frac{2a\log 2 + b\log 2}{3\log 2}$ OR $\frac{\log_2 3}{\log_2 8} + \frac{\log_2 3}{\log_2 8} + \frac{\log_2 5}{\log_2 8}$

Soalan 8 (... samb.)

√ M1

$\frac{\log_2 45}{\log_2 8}$ or $\frac{\log 3}{\log 2}$ or $\frac{\log 5}{\log 2}$ or $\frac{\log 5}{\log 8}$ or $\frac{\log 9}{\log 8}$

$2\log_8 3 + \log_8 5$ OR $\log 9 + \log 5$ OR

$\log 3 + \log 3 + \log 5$ OR $2^a = 3$ or $2^b = 5$

OR any sum or different of log
involving digit 2, 3, 5, 9 that leads to 45

Soalan 9

(a) 40 √ 2

$\frac{5}{2}[3(5)+1]$ **OR** $\frac{5}{2}[2(2)+(5-1)3]$ √ M1

OR 2 + 5 + 8 + 11 + 14

(b) 14 √ 2

$^{*}40 - \frac{4}{2}[3(4)+1]$ or $\frac{5}{2}[3(5)+1]-[3(4)+1]$

OR $^{*}40 = \frac{5}{2}(2+T_5)$ √ M1

OR $2+(5-1)3$

OR 2, 5, 8, 11, 14 (jika beri > 5 sebutan, mesti betul sebutan-sebutan itu)

Soalan 10

(a) x^2 √ 1 kes-kes: $x^2 = x^2$ √ 0

$r = x^2$ √ 1

$= x^2$ √ 1

(b) $\sqrt{3/2}$ or 0.8165 √ 2

$\frac{1}{1 - *x^2} = 3$ or $x^2 = 2/3$ OR $r = 2/3$ √ M1

OR $x^4 / x^2 = 2/3$ or $x^6 / x^4 = 2/3$

Soalan 11

(a) $2h + 1$ √ 2

$k - 3h = h + 2 - k$ **OR** $k = \frac{3h + h + 2}{2}$ √ M1

OR $k = 3h + \frac{h + 2 - 3h}{2}$

<u>Terima</u>: Guna $T_2 = a + (2 - 1)\,d$ or

$T_3 = a + (3 - 1)$ or $T_3 = T_2 + d$

<u>Syarat</u>: a dan d mesti betul dan dalam sebutan h dan k

Soalan 11 (... samb.)

(b) $9 - 6h$ √ 2

$3h + (10 - 1)(k - 3h)$ or √ M1

$3h + (10 - 1)(h + 2 - k)$ or

$3h + (10 - 1)[*(2h + 1) - 3h]$ or

$3h + (10 - 1)[h + 2 - *(2h + 1)]$ or

Kes: $T_{10} = 3h + 9(1 - h)$

$= 9 - 6h$ √ 2

$= 3 - 2h$ (abaikan)

Soalan 12

h = 2, k = 6 (kedua-dua) √ 3

$\frac{h}{k} = 3$ **dan** $k = 6$ **OR** $\frac{k}{h} = 3$ **dan** $h = 2$

(kedua-dua) √ M2 **(kedua-dua)**

$\frac{k}{h} = 3$ **or** $k = 6$ **or** $h = 2$ **or setara. √ M1**

Terima: $y = 3x^2 + 6$ **or** $y = 3x^2 + k$ **or √ M1**

$6 = 3(0)^2 + k$ **dll....**

Soalan 13

(a) 8 √ 2

$$\frac{7-(-5)}{6-(-2)} = \frac{7-10}{6-h} \quad \text{or} \quad \frac{7-(-5)}{6-(-2)} = \frac{-5-10}{-2-h}$$

$$\text{or} \quad \frac{10-(-5)}{h-(-2)} = \frac{10-7}{h-6} \qquad \surd M1$$

OR $10 = [\frac{7-(-5)}{6-(-2)}](h) - 2$ or <u>setara</u>

OR kaedah mencari luas segitiga koordinat yg kolinear. √ M1

Soalan 13 (... samb.)

$(0, -2)$ **or** $x = 0,\ y = -2$ **√ 2**

$$\frac{1(6) + 3(-2)}{1 + 3} \quad \textbf{or} \quad \frac{1(7) + 3(-5)}{1 + 3} \quad \textbf{√ M1}$$

OR
$$\frac{1\begin{pmatrix} 6 \\ 7 \end{pmatrix} + 3\begin{pmatrix} -2 \\ -5 \end{pmatrix}}{1 + 3} \quad \textbf{√ M1}$$

OR yang setara.

Soalan 14

$x^2 + y^2 + 6x - 8y = 0$ or setara. √ 3

$\sqrt{[x-(-3)]^2 + (y-4)^2} = 5$ or setara √ M2

or $[x-(-3)]^2 + (y-4)^2 = 25$

PQ = 5 or $\sqrt{[x-(-3)]^2 + (y-4)^2}$ √ M1

<u>Terima</u>: tanpa tanda punca ganda dua

Soalan 15

(a) $3\underset{\sim}{i} + 4\underset{\sim}{j}$ √ 1

Terima: $3\,i + 4\,j$, $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$ Tolak: $4\,i + 3\,j$, $3\,i + 4\,j$

(b) $\frac{3}{5}\underset{\sim}{i} + \frac{4}{5}\underset{\sim}{j}$ or $\frac{3\underset{\sim}{i} + 4\underset{\sim}{j}}{5}$ or $\frac{1}{5}(3\underset{\sim}{i} + 4\underset{\sim}{j})$ √ 2

or $0.6\,\underset{\sim}{i} + 0.8\,\underset{\sim}{j}$

$\sqrt{*3^2 + *4^2}$ or $*5$ √ M1

Terima: tanpa simbol vektor

Soalan 16

(a) $-5\underset{\sim}{a} + 4\underset{\sim}{b}$ or $4\underset{\sim}{b} + 5\underset{\sim}{a}$ √ 2

Terima: $4\underset{\sim}{b} + (-5\underset{\sim}{a})$ √ M1

$\overrightarrow{AB} = \overrightarrow{AO} + \overrightarrow{OB}$ or $\overrightarrow{AB} = \overrightarrow{OB} - \overrightarrow{OA}$ or

$\overrightarrow{AB} = \overrightarrow{AO} - \overrightarrow{BO}$ or $\overrightarrow{AB} = -\overrightarrow{BO} - \overrightarrow{OA}$

(b) $2\underset{\sim}{a} + \frac{12}{5}\underset{\sim}{b}$ or setara √ 2

$\frac{3}{5}*(-5\underset{\sim}{a} + 4\underset{\sim}{b})$ or $\frac{3}{5}*(5\underset{\sim}{a} - 4\underset{\sim}{b})$ √ M1

$\frac{2}{5}*(-5\underset{\sim}{a} + 4\underset{\sim}{b})$ or $\frac{2}{5}*(5\underset{\sim}{a} - 4\underset{\sim}{b})$

Soalan 17

59 **OR** sebarang jawapan yang dibundarkan kpd 4 angka bererti. √ 3

½ x 10^2 1.5 – ½ x 8^2 x 0.5 √ M2

or (85.85 → 85.94) – (28.55 → 28.64)

Terima: $\frac{85.9\pi}{360} \times 10^2 - \frac{28.6\pi}{360} \times 8^2$

½ x 10^2 1.5 **or** ½ x 8^2 0.5 √ M1

Terima: $\frac{85.9\pi}{360} \times 10^2$ **or** $\frac{28.6\pi}{360} \times 8^2$

Soalan 18

$\frac{1 - p^2}{p^2}$ or $\frac{1}{p^2} - 1$ √ 2

$\tan^2 \theta = \frac{1 - \cos^2 \theta}{\cos^2}$ or $\frac{1}{\cos^2} - 1$ √ M1

OR $\tan^2 \theta = \frac{\sqrt{1 - p^2}}{p^2}$ OR $\tan^2 \theta = \frac{\sqrt{1^2 - p^2}}{p^2}$

$\tan^2 \theta = -\frac{\sqrt{1^2 - p^2}}{p^2}$

Soalan 19

3 √ 3

$\frac{2(2)}{3-2} = \frac{2(1)}{3-1}$ **OR** $\frac{6(3-2)^{-1}}{(-1)(-1)} = \frac{6(3-1)^{-1}}{(-1)(-1)}$ √ M2

$\frac{2x}{3-x}$ **OR** $\int \frac{6}{(3-x)^2}$ √ M1

Kes Terima: √ M2

$2^2 - 1$ **or** $2^2 - 1^2$

or $\int [4-1]$ **or** $\int = 4 - 1$

Tak terima: $g(x) = \frac{2x}{3-x}$ M0

Soalan 20

(a) $4x - 12$ √ 1

(b) 3 √ 1 Tidak terima: $x > 3$, $x \geq 3$

(c) –18 √ 1

Soalan 21

$4\sqrt{3}$ √3 **Terima**: $-4, 4$ **or** $\pm 4\sqrt{3}$ √3

$4\pi r^2 = 12.8\pi\left(\frac{1}{0.2}\right)$ √ M2 **or** $0.2 = \frac{1}{4\pi r^2} \times 12.8\pi$ √ M2

or $12.8\pi = 4\pi r^2 \times 0.2$ √ M2

√ M1 $4\pi r^2$ **or** $\frac{dv}{dt} = 12.8\pi$ √ M1 **Tolak**: $\frac{v}{t} = 12.8\pi$ M0

or $\frac{dr}{dt} = 0.2$ √ M1 **or** $\frac{r}{t} = 0.2$

Soalan 22

4 √ 3

$Q_1 = 3$, $Q_7 = 7$ (kedua-dua) √ M2

$Q_1 = 3$ or $Q_7 = 7$ √ M1

Kes-kes: 2, 3, 4, 5, 7, 9 2, 3, 4, 5, 7, 9

↑ ↑

Q1 Q_3 √ M2 Mo

3, 4, 7 Mo 3 4 7 √ M2

Soalan 23

20 √ 3

$^6C_3$ or $^6C_3 \times {}^3C_3$ or $^6C_3 \times 1$ √ B2

$^6C_3 \times n!$ or $n! \times {}^6C_3$ √ B1 (n! tidak dikembangkan)

$^6C_3 \times {}^nP_r$ or ${}^nP_r \times {}^6C_3$ ($n \geq r$)

$^6C_3 \times {}^nC_r$ ${}^nC_r \times {}^6C_3$

$^6C_3 \times h$ $h \times {}^6C_3$

Nota: mesti dalam bentuk hasil darab dua sebutan.

Soalan 24

(a) 1/15 or 0.06667 or 0.0667 √ 2

$2/5 = 1/3 + P(Y)$ √ M1

(b) 3/5 or 0.6 or 1 √ 1

Terima 1 (sebab drp tafsiran soalan)

$P(X' \cup Y') = P(X') + P(X') - P(X' \cap Y')$

$= 2/3 + 14/15 - 3/5 = 1$

Soalan 25

(a) 3/8 or 0.375 √ 2

$1 - (1/16 + \frac{1}{4} + \frac{1}{4} + 1/16)$ OR √ M1

$4C2(1/2)^2(1/2)^2$ or

$1/16 + \frac{1}{4} + k + \frac{1}{4} + 1/16 = 1$

(b) 5/16 or 0.3125 √ 2

$P(X = 3) + P(X = 4)$ or √ M1

$4C3\ p^3 q^1 + 4C4\ p^4 q^0$

Terima: simbol lain selain p dan q, asalkan tidak sama dan $p + q = 1$

Soalan 25 (... samb.)

Nota: Jika nilai *p* dan *q* yang digantikan salah, terima jika *p* dan *q* jelas dinyatakan dan $p + q = 1$ √ M1

Contoh: $p = 0.25,\ q = 0.75$

$${}^4C_3(0.25)^3(0.75)^1 + {}^4C_4(0.25)^4(0.75)^0$$

OR $1 - [P(X = 0) + P(X = 1) + P(X = 2)$

or $${}^4C_3\,(1/2)^3\,(1/2)^1 + {}^4C_4\,(1/2)^4\,(1/2)^0$$

√ M1

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