PANDUAN PENSKORAN

NO SOALAN	SKEMA	SUB MARKAH	JUMLAH MARKAH
1	(*a*) 2	N1	**3**
	(*b*) {1,4,7,10}	N1	
	(*c*) $f: x \to 3x - 2$ @ $f(x) = 3x - 2$	N1	
2	(*a*) Guna hukum bahagi **DAN** Bandingkan *indeks ——————— $2^{2n} = 2^{1-(n-p)}$ $2n = 1 - (n - p)$ $n = \frac{p+1}{3}$	K1 N1	**5**
	(*b*) Guna hukum kuasa ——————— $5^{2np+1} = 750 - 5^{2np}$ Guna hukum darab **DAN** Bandingkan *indeks ——————— $5^{2np}(5^1) + 5^{2np} = 750$ $5^{2np} = 5^3$ $2np = 3$ $n = \frac{3}{2p}$	K1 K1 N1	
3	(*a*) Guna hukum tukar asas @ hukum kuasa ——————— $\frac{\log_2 x^2}{\log_2 4}$ @ $\log_2 x^3$ Guna hukum bahagi **DAN** hukum darab ——————— $\log_2\left[\frac{(2x-1)}{x^4} \times x^3\right]$ $\log_2\left(\frac{2x-1}{x}\right)$	K1 K1 N1	**6**

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	(*b*) **ALTERNATIF A** Guna hukum bahagi $\ln\left(\frac{5x}{y^2}\right)=3$ @ $\log_e\left(\frac{5x}{y^2}\right)=3$ Tukar bentuk log kepada bentuk indeks $\frac{5x}{y^2}=e^3$ $y=\pm\sqrt{\frac{5x}{e^3}}$ **ALTERNATIF B** Tukar bentuk indeks kepada bentuk log $\ln e^3$ @ $\log_e e^3$ Guna hukum darab **DAN** Banding $5x$ dengan e^3y^2 $\ln(5x)=\ln\left(e^3y^2\right)$ @ $\log_e(5x)=\log_e\left(e^3y^2\right)$ $5x=e^3y^2$ $y=\pm\sqrt{\frac{5x}{e^3}}$	K1 K1 N1 K1 K1 N1	
4	(*a*) $2(x+\delta x)^2-3(x+\delta x)$ $\underset{\delta x\to 0}{had}\ \frac{*[2(x+\delta x)^2-3(x+\delta x)]-(2x^2-3x)}{\delta x}$ $\frac{dy}{dx}=4x-3$ Nota: δx boleh diganti denga apa-apa pembolehubah kecuali x dan y.	P1 K1 N1	**6**

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	(*b*) Kamir $\frac{x^4-8x^2}{3x}$ terhadap x $\left(y=\frac{1}{12}x^4-\frac{4}{3}x^2+c\right)$ Ganti (2, –1) ke dalam *kamiran **DAN** Selesaikan untuk c $-1=\frac{1}{12}(2)^4-\frac{4}{3}(2)^2+c$ $c=3$ $y=\frac{1}{12}x^4-\frac{4}{3}x^2+3$	K1 K1 N1	
5	$A=(-3,-6)$ $\sqrt{6^2+8^2}=\sqrt{(-3+k)^2+(-6)^2}$ $k=11$ $\overrightarrow{AC}=14\underline{i}+2\underline{j}$	P1 K1 N1 N1	**4**
6	(*a*) $\frac{y}{x^3}=\frac{b}{x^2}-7$	P1	
	(*b*) **ALTERNATIF A** $\frac{b}{8}=-7k+b$ or $hk=-7h+b$ $hk+7h=8k$ $h=\frac{8k}{k+7}$ **ALTERNATIF B** $\frac{\frac{b}{8}-b}{k-0}=-7$ @ $\frac{hk-\frac{b}{8}}{h-k}=-7$ @ $\frac{hk-b}{h-0}=-7$ $\frac{hk-\frac{8k}{8}}{h-k}=-7$ @ $\frac{hk-8k}{h-0}=-7$ $h=\frac{8k}{k+7}$	K1 K1 N1 K1 K1 N1	**4**

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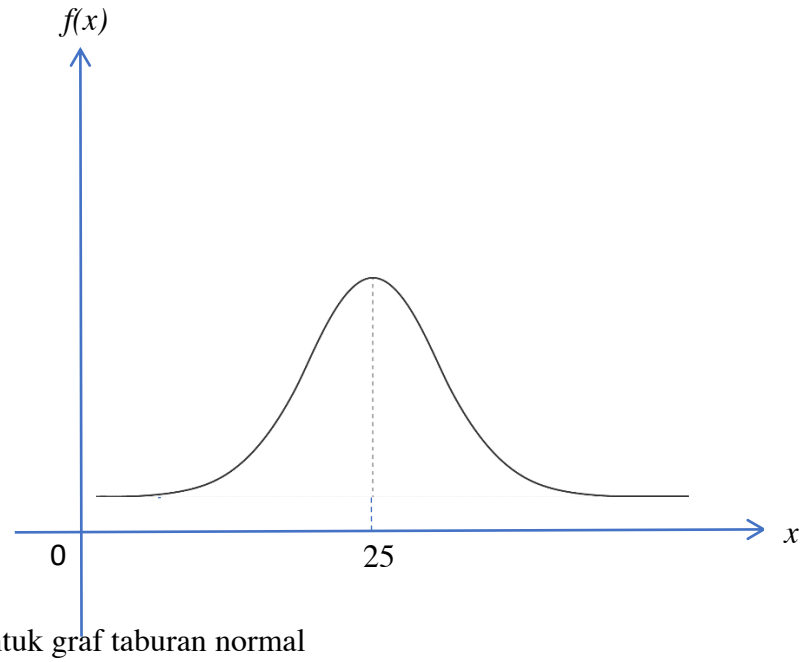
7	(*a*) 2.095	N1	**7**
	(*b*) i) $7*(2.095)\ @\ 7(3.142)\ @\ \sqrt{7^2+7^2}$ $7*(2.095) + 7(3.142) + 7(6) + *\ 7\sqrt{2}$ 88.56	K1 K1 N1	
	ii) $\frac{1}{2}\left(7^2\right)*(2.095)\ @\ \frac{1}{2}\left(7^2\right)(3.142)\ @\ \frac{1}{2}(7)(7)$ $A_1 = 51.3275, A_2 = 76.979, A_3 = 24.50$ $*A_2 - *A_1 + *A_3$ 50.15	K1 K1 N1	
8	(*a*)  Bentuk graf taburan normal Paksi-*x* dilabel *x* Paksi-*y* dilabel *f(x)* Kedua-dua paksi menggunakan pembaris Paksi simetri dilabel dengan 25	P1	**4**

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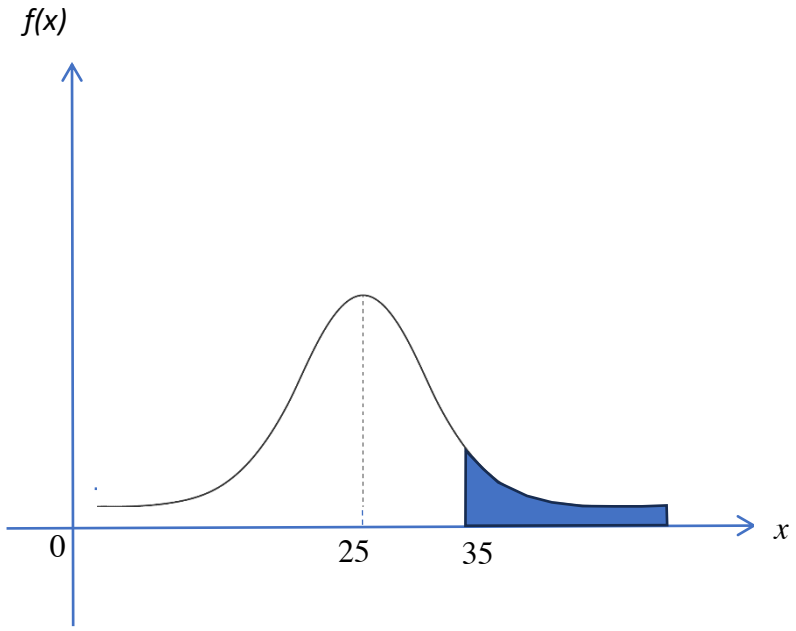
	(*b*)  Bentuk graf taburan normal Paksi-*x* dilabel *x* Paksi-*y* dilabel *f(x)* Kedua-dua paksi menggunakan pembaris Paksi simetri dilabel dengan 25 Garis 35 dan lorekkan sebelah kanan $P(Z > \frac{35-25}{6.3})$ 0.0563	P1 K1 N1	
9	(*a*) $P(X = 4) + P(X = 5)$ ${}^{5}C_{4} \times 0.75^{4} \times 0.25^{1} + {}^{5}C_{5} \times 0.75^{5} \times 0.25^{0}$ 0.6328	 K1 N1	
	(*b*) $P(X = 5) + P(X = 6)$ ${}^{6}C_{5} \times {}^{*}0.6328^{5} \times (1 - {}^{*}0.6328)^{1} +$ ${}^{6}C_{6} \times {}^{*}0.6328^{6} \times (1 - {}^{*}0.6328)^{0}$ 0.2878	 K1 N1	**4**
10	(*a*) $(1 \times {}^{4}P_{2} \times {}^{3}P_{1}) \ @ \ (1 \times {}^{4}P_{2} \times {}^{2}P_{1})$ $(1 \times {}^{4}P_{2} \times {}^{3}P_{1}) + (1 \times {}^{4}P_{2} \times {}^{2}P_{1})$ 60	 K1 K1 N1	**8**

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	(*b*) i) $^5C_2 \times {}^4C_2$	K1	
	60	N1	
	ii) $^5C_2 \times {}^4C_1$ @ $^5C_1 \times {}^4C_2$	K1	
	$^5C_2 \times {}^4C_1 + {}^5C_1 \times {}^4C_2$	K1	
	70	N1	
11	$\pi r^2(6) - 3\sqrt{2}\pi r^2 = 3\left(1+\sqrt{8}\right)\pi$	K1	**4**
	$r^2 = \frac{3+6\sqrt{2}}{6-3\sqrt{2}} \times \frac{6+3\sqrt{2}}{6+3\sqrt{2}}$ @ $r^2 = \frac{1+2\sqrt{2}}{2-\sqrt{2}} \times \frac{2+\sqrt{2}}{2+\sqrt{2}}$	K1	
	$r^2 = \frac{18+9\sqrt{2}+36\sqrt{2}+18(2)}{36-9(2)}$ @ $r^2 = \frac{2+\sqrt{2}+4\sqrt{2}+2(2)}{4-2}$	K1	
	$r = \sqrt{3+\frac{5}{2}\sqrt{2}}$	N1	
	Nota: 1. **K1²** – Pengangka dan penyebut mesti mengandungi sekurang²nya dua sebutan dengan surd 2. **K1³.** – 6 sebutan bagi hasil pendaraban (4 di atas 2 di bawah)		
12	(*a*) T_n: $q(0.9)^{n-1} = 324$	P1	**9**
	S_n: $\frac{q\left(1-(0.9)^n\right)}{1-0.9} = 1084$	P1	
	Selesaikan *persamaan serentak melibatkan 2 anu	K1	
	$\frac{(0.9)^n}{1-(0.9)^n} = \frac{729}{271}$		
	$1000(0.9)^n = 729$		
	$n\log_{10} 0.9 = \log_{10} 0.729$	N1	
	$n = 3$	N1	
	$q = 4$		

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	(*b*) $4(0.9)^{n-1} < 2$ $n = 8$	K1 N1	
	(*c*) $\frac{4}{1-0.9}$ 40	K1 N1	
13	(*a*) $\alpha = 60^0 \ \ ref\ angle$ dilihat $5^0, 65^0, 185^0, 245^0$	P1 N1	**8**
	(*b*) $kos\ \theta\ kos\ \theta - \sin\theta \sin\theta$ $kos^2\theta - \ sin^2\theta$ $kos\ 2\theta = 1 - 2\ sin^2\theta$ Nota : Penggunaan $kos^2\theta = 1 - sin^2\theta$ dilihat	K1 N1	
	(i) $2\left(\frac{1}{\sqrt{1+p^2}}\right)\left(-\frac{p}{\sqrt{1+p^2}}\right)$ $-\frac{1+p^2}{2p}$ (ii) $\frac{1}{\sqrt{1+p^2}}(0) - \left(-\frac{p}{\sqrt{1+p^2}}\right)(1)$ $\frac{p}{\sqrt{1+p^2}}$	K1 N1 K1 N1	
14	(*a*) $(1)^2 - 4(p)(-q) > 0$ $q < -\dfrac{1}{4p}$	K1 N1	**8**
	(*b*) $m+n = -\dfrac{1}{p}$ @ $m+n = \dfrac{1}{2}$ **DAN** $mn = \dfrac{-q}{p}$ $\dfrac{\left(-\frac{1}{p}\right)^2 - 2\left(\frac{-q}{p}\right)}{\left(\frac{-q}{p}\right)}$ @ $\dfrac{\left(\frac{1}{2}\right)^2 - 2\left(\frac{-q}{-2}\right)}{\left(\frac{-q}{-2}\right)}$ $\dfrac{m}{n} + \dfrac{n}{m} = \dfrac{1}{2q} - 2$	P1 K1 N1	

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	(*c*) $p\left(x^2+\frac{1}{p}x+\left(\frac{\left(\frac{1}{p}\right)}{2}\right)^2-\left(\frac{\left(\frac{1}{p}\right)}{2}\right)^2\right)+q$ @ $-2\left(x^2-\frac{1}{2}x+\left(\frac{\left(-\frac{1}{2}\right)}{2}\right)^2-\left(\frac{\left(-\frac{1}{2}\right)}{2}\right)^2\right)+q$ @ $p\left(x+\frac{1}{2p}\right)^2-\frac{1}{4p}+q$ @ $-2\left(x-\frac{1}{4}\right)^2+\frac{1}{8}+q$ $\frac{1}{8}+q$	K1 N1 N1	
15	(*a*) Guna rumus jarak $\sqrt{(h-(-4))^2+(1-(-1))^2}$ $\sqrt{(h-(-4))^2+(1-(-1))^2}=2\sqrt{10}$ $h=2$	K1 K1 N1	**8**

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	(*b*) **ALTERNATIF A** Guna $m_1 \times m_2 = -1$ $\left[m \times \frac{1}{3} = -1 \ @ \ \frac{1}{3} \times m = -1 \right]$ Ganti (–1, 0) ke dalam $y = mx + c$ **DAN** Selesaikan untuk c **OR** Guna $y - y_1 = m(x - x_1)$ $0 = -3(-1) + c$ $c = -3$ **OR** $y - 0 = -3(x - (-1))$ $y = -3x - 3$ Ganti (k, p) ke dalam $y = -3x - 3$ $p = -3k - 3$ $k = \frac{p-3}{3}$ **ALTERNATIF B** Guna rumus jarak $\left[\sqrt{(x-(-4))^2 + (y-(-1))^2} \ @ \ \sqrt{(x-2)^2 + (y-1)^2} \right]$ $\sqrt{(x-(-4))^2 + (y-(-1))^2} = \sqrt{(x-2)^2 + (y-1)^2}$ $y = -3x - 3$ Ganti (k, p) ke dalam $y = -3x - 3$ $p = -3k - 3$ $k = \frac{p-3}{3}$	K1 K1 N1 K1 N1 K1 K1 N1 K1 N1	

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