PROGRAM GEMPUR KECEMERLANGAN
SIJIL PELAJARAN MALAYSIA 2023
NEGERI PERLIS

GEMPUR KECEMERLANGAN 2023 3472/1(PP)

MATEMATIK TAMBAHAN
Kertas 1
Peraturan Pemarkahan
November

UNTUK KEGUNAAN PEMERIKSA SAHAJA

Peraturan pemarkahan ini mengandungi halaman bercetak

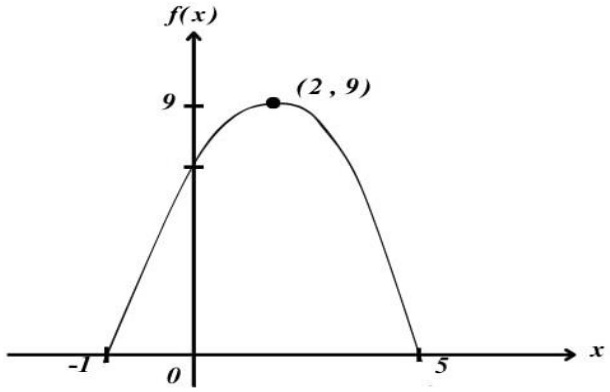
No.	Solution and Mark Scheme	Sub Marks	Total Marks
1			
(a)	$f^{-1}(x) = \frac{x+5}{8}$ N1	**1**	
(b)	$g(8x-5) = 24x + 5$ atau $gf(x) = 24x + 5$ P1 $g(x) = 24 * \left(\frac{x+5}{8}\right) + 15$ K1 $g(x) = 3x + 30$ N1	**3**	**4**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
2	a) $x + y = 2z$ atau $x + y - 2z = 0$ N1 K1 b) Hapuskan 2 pembolehubah $3z = 45$ $z = 15$ N1 $y = 20$ N1 $x = 10$ N1	**1** **4**	**5**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
3			
(a)	$\frac{dv}{dr} = 2\pi r^2$ $= 2\pi\,(15)^2$ K1 $\delta V = 2\pi\,(15)^2 \times 0.02$ K1 $= 9\pi$ N1	**3**	
(b)	$\frac{dv}{dt} = -5.4\pi$ K1 $\frac{dr}{dt} = \frac{1}{450\pi} \times (-5.4\pi)$ K1 -0.012 N1	**3**	**6**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
4			
a)	$\log_a x = p$ atau $\log_a y = q$ P1 $\frac{x}{y} = a^{p-q}$ K1 $\log_a \frac{x}{y} = \log_a x - \log_a y$ N1	**3**	
b)	Guna hukum bahagi / tukar asas K1 $\log_4 P - \log_4 Q$ atau $\log_2 \frac{P}{Q}$ atau $\frac{\log_2 \frac{P}{Q}}{\log_2 4}$ atau $\frac{\log_4 \frac{P}{Q}}{\log_4 2}$ Guna hukum kuasa K1 $2 \log_4 \frac{P}{Q}$ N1	**3**	**6**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
5 (a)	${}^6C_6 \times {}^5C_1$ *or* ${}^6C_5 \times {}^5C_2$ *or* ${}^6C_4 \times {}^5C_3$ P1		
	${}^6C_6 \times {}^5C_1 + {}^6C_5 \times {}^5C_2 + {}^6C_4 \times {}^5C_3$ K1		
	215 N1	**3**	
(b)	4! P1		
	$4! \times 4!$ K1		
	576 N1	**3**	**6**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
6			
(a)	 Bentuk graf P1 Titik Maksimum (2,9) P1 Pintasan-x P1	3	
(b)	$f(x) = (x-2)^2 - 9$ atau Setara N1	1	4

No.	Solution and Mark Scheme	Sub Marks	Total Marks
7			
(a)	$\frac{CD}{DE} = \frac{AP}{PB}$ P1 (Rujuk label pada Rajah 7)		
	$n(x - x_1) = m(x_2 - x)$ K1		
	$x = \frac{nx_1 + mx_2}{m+n}$ N1	**3**	
(b)	$h = \frac{2(2)+3(12)}{3+2}$ *atau* $5 = \frac{2(2)+3k}{3+2}$ K1		
	$h = 8$ N1		
	$k = 7$ N1	**3**	**6**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
8			
(a)	$rS_n = ar + ar^2 + ar^3 + ar^4 + \cdots \ldots . + ar^{n-1} + ar^n$ P1 Guna $S_n - rS_n$ K1 $S_n - rS_n = ar - ar^n$ $S_n = \frac{a(1-r^n)}{1-r}$ N1	**3**	
(b)	$-1 < r < 1$ N1	**1**	**4**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
9			
(a)	$3\int_3^5 f(x)\,dx - 3\int_3^5 qx\,dx = 6$ K1		
	$3\left[10 - \left[\frac{qx^2}{2}\right]_3^5\right] = 6$ K1		
	$q = 1$ N1	**3**	
(b)	$\frac{1}{2}(-10) + 10$ K1		
	5 N1	**2**	**5**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
10	Guna		
(a)	$\cos x \cos y + \sin x \sin y$ atau $\cos x \cos y - \sin x \sin y$ (K1)		
(i)	$\frac{5}{8}$ [N1]		
(ii)	$-\frac{1}{8}$ [N1]	**3**	
(b)	$x - y = 51.32^\circ$ atau $x + y = 97.18^\circ$ [N1]		
	Selesaikan persamaan serentak (K1)		
	$2y = 45.86^\circ$ atau $2x = 148.50^\circ$		
	$x = 74.25^\circ$ dan $y = 22.93^\circ$ [N1]	**3**	**6**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
11			
(a)			
(i)	$\mid 15i - 8j \mid$ N1		
	$\sqrt{15^2 + (-8)^2}$ K1		
	17 meter N1		
(ii)	$\frac{15}{17}\underset{\sim}{i} - \frac{8}{17}\underset{\sim}{\text{j}}$ N1	**4**	
(b)			
(i)	$\underset{\sim}{V} + \underset{\sim}{U}$ N1		
(ii)	$\frac{x-x'}{15} = \frac{2}{3}$ K1		
	10 meter N1	**3**	**7**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
12			
(a)	$\mu = 10$ P1		
	$\frac{15-10}{\sigma} = 0.539$ K1		
	$\sigma = 9.276$ N1	**3**	
(b)	$\frac{7-10}{*9.276} \leq Z \leq \frac{15-10}{*9.276}$ K1		
	$-0..3234 \leq Z \leq 0.5390$		
	0.3316 atau 0.3319 N1	**2**	**5**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
13			
(a)	$r-6$ P1		
	$(r-6)^2+8^2=r^2$ K1		
	$r=8.333$ N1	**3**	
(b)	$2\,[\sin^{-1}(\frac{8}{*8.333})]$ K1		
	147.50° N1		
	2.574 rad N1	**3**	
(c)	$\frac{1}{2}(*8.333)^2[*2.574-sin\,*147.50°]$ K1		
	70.71 cm^2 N1	**2**	**8**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
14			
(a)	$\frac{dy}{dx} = 12(1) - 3(1)^2$ (K1) $= 9$ [N1] $y - 10 = *9(x-1) \quad atau \quad 10 = 9(1) + c$ (K1) $y = 9x + 1$ [N1]	**4**	
(b)	$\frac{dy}{dx} = 12x - 3x^2 = 0$ $3x(4-x) = 0$ (K1) $x = 0, \quad x = 4$ [N1] $(0, 5) \quad (4, 37)$ [N1] [N1]	**4**	**8**

No.	Solution and Mark Scheme	Sub Marks	Total Marks
15			
(a)	$\frac{y}{x} = 2\left(\frac{1}{x^2}\right) + q$ P1		
	$\frac{p-5}{3-1} = 2$ atau $5 = 2(1) + q$ K1		
	$p = 9$ N1		
	$q = 3$ N1	**4**	
(b)	$\log \frac{y}{k\sqrt{x}} = \log p$ P1		
	$\log y = (\log k)\sqrt{x} + \log p$ K1		
	Y$= \log y$, $X = \sqrt{x}$, $m = \log k$, $C = \log p$ N2 semua betul		
	N1 3 betul	**4**	**8**

