

**SULIT**

**PROGRAM GEMPUR KECEMERLANGAN  
SIJIL PELAJARAN MALAYSIA 2023  
NEGERI PERLIS**

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**GEMPUR KECEMERLANGAN 2023  
MATEMATIK TAMBAHAN  
Kertas 1  
Peraturan Pemarkahan  
November**

**3472/1(PP)**

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**UNTUK KEGUNAAN PEMERIKSA SAHAJA**

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Peraturan pemarkahan ini mengandungi halaman bercetak

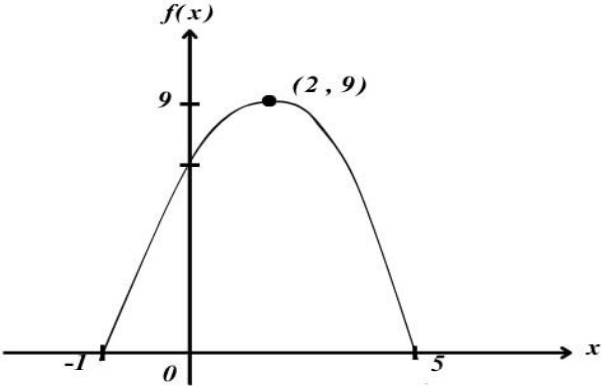
No.	Solution and Mark Scheme	Sub Marks	Total Marks
1	<p data-bbox="188 376 671 434">(a) <math>f^{-1}(x) = \frac{x+5}{8}</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p> <p data-bbox="188 546 834 645">(b) <math>g(8x - 5) = 24x + 5</math> atau <span style="border: 1px solid black; padding: 2px;">P1</span> <math>gf(x) = 24x + 5</math></p> <p data-bbox="360 680 839 748"><math>g(x) = 24 * \left(\frac{x+5}{8}\right) + 15</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p data-bbox="360 801 762 869"><math>g(x) = 3x + 30</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p>	1    3	    4





No.	Solution and Mark Scheme	Sub Marks	Total Marks
4	<p>a) <math>\log_a x = p</math> atau <math>\log_a y = q</math> <span style="border: 1px solid black; padding: 2px;">P1</span></p> <p><math>\frac{x}{y} = a^{p-q}</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p><math>\log_a \frac{x}{y} = \log_a x - \log_a y</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p> <p>b) <u>Guna hukum bahagi / uka a a</u> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p><math>\log_4 P - \log_4 Q</math> atau <math>\log_2 \frac{P}{Q}</math> <math>\frac{\log_2 \frac{P}{Q}}{\log_2 4}</math> <math>\frac{\log_4 \frac{P}{Q}}{\log_4 2}</math></p> <p><u>Guna hukum kuasa</u> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p><math>2 \log_4 \frac{P}{Q}</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p>	3	6

No.	Solution and Mark Scheme	Sub Marks	Total Marks
<p><b>5</b> <b>(a)</b></p>	${}^6C_6 \times {}^5C_1 \text{ or } {}^6C_5 \times {}^5C_2 \text{ or } {}^6C_4 \times {}^5C_3$ <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">P1</div> ${}^6C_6 \times {}^5C_1 + {}^6C_5 \times {}^5C_2 + {}^6C_4 \times {}^5C_3$ <div style="text-align: right; border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">K1</div> <p style="text-align: center;">215</p> <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">N1</div>	<b>3</b>	
<p><b>(b)</b></p>	<p>4!</p> <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">P1</div> <p>4! × 4!</p> <div style="text-align: right; border: 1px solid black; border-radius: 50%; padding: 2px; display: inline-block;">K1</div> <p style="text-align: center;">576</p> <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">N1</div>	<b>3</b>	<b>6</b>

No.	Solution and Mark Scheme	Sub Marks	Total Marks
<p><b>6</b></p> <p><b>(a)</b></p>	 <p>Bentuk graf <input type="text" value="P1"/></p> <p>Titik Maksimum (2,9) <input type="text" value="P1"/></p> <p>Pintasan-x <input type="text" value="P1"/></p>	<b>3</b>	
<p><b>(b)</b></p>	<p><math>f(x) = (x - 2)^2 - 9</math> <input type="text" value="N1"/></p>	<b>1</b>	<b>4</b>

No.	Solution and Mark Scheme	Sub Marks	Total Marks
7	<p data-bbox="188 488 231 526">(a)</p> $\frac{CD}{DE} = \frac{AP}{PB} \quad \boxed{\text{P1}}$ $n(x - x_1) = m(x_2 - x) \quad \boxed{\text{K1}}$ $x = \frac{nx_1 + mx_2}{m+n} \quad \boxed{\text{N1}}$ <p data-bbox="188 929 231 967">(b)</p> $h = \frac{2(2)+3(12)}{3+2} \quad \text{atau} \quad 5 = \frac{2(2)+3k}{3+2} \quad \boxed{\text{K1}}$ $h = 8 \quad \boxed{\text{N1}}$ $k = 7 \quad \boxed{\text{N1}}$	3	6



No.	Solution and Mark Scheme	Sub Marks	Total Marks
<p><b>8</b></p> <p><b>(a)</b></p>	$rS_n = ar + ar^2 + ar^3 + ar^4 + \dots + ar^{n-1} + ar^n$ <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">P1</div> <p>Guna <math>S_n - rS_n</math>      (K1)</p> $S_n - rS_n = ar - ar^n$ $S_n = \frac{a(1-r^n)}{1-r}$ <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">N1</div>	<b>3</b>	
<p><b>(b)</b></p>	$-1 < r < 1$ <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;">N1</div>	<b>1</b>	<b>4</b>

No.	Solution and Mark Scheme	Sub Marks	Total Marks
<p><b>9</b></p> <p><b>(a)</b></p>	$3 \int_3^5 f(x) dx - 3 \int_3^5 qx dx = 6$ <p style="text-align: right;">(K1)</p> $3 \left[ 10 - \left[ \frac{qx}{2} \right]_3^5 \right] = 6$ <p style="text-align: right;">(K1)</p> $q = 1$ <p style="text-align: right;">(N1)</p>	<b>3</b>	<b>5</b>
<p><b>(b)</b></p>	$\frac{1}{2} (-10) + 10$ <p style="text-align: right;">(K1)</p> $5$ <p style="text-align: right;">(N1)</p>	<b>2</b>	

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

No.	Solution and Mark Scheme	Sub Marks	Total Marks
<p><b>11</b></p> <p><b>(a)</b></p> <p><b>(i)</b></p>	<p><math> 15i - 8j </math> <span style="border: 1px solid black; padding: 2px;">N1</span></p> <p><math>\sqrt{15^2 + (-8)^2}</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p>17 meter <span style="border: 1px solid black; padding: 2px;">N1</span></p>		
<p><b>(ii)</b></p>	<p><math>\frac{15}{17}\tilde{i} - \frac{8}{17}\tilde{j}</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p>	<b>4</b>	
<p><b>(b)</b></p> <p><b>(i)</b></p>	<p><math>\tilde{V} + \tilde{U}</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p>		
<p><b>(ii)</b></p>	<p><math>\frac{x-x'}{15} = \frac{2}{3}</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p>10 meter <span style="border: 1px solid black; padding: 2px;">N1</span></p>	<b>3</b>	<b>7</b>

No.	Solution and Mark Scheme	Sub Marks	Total Marks
12	<p>(a) <math>\mu = 10</math> <span style="float: right;">□ P1</span></p> <p><math>\frac{15-10}{\sigma} = 0.539</math> <span style="float: right;">○ K1</span></p> <p><math>\sigma = 9.276</math> <span style="float: right;">□ N1</span></p> <p>(b) <math>\frac{7-10}{9.276} \leq Z \leq \frac{15-10}{9.276}</math> <span style="float: right;">○ K1</span></p> <p><math>-0.3234 \leq Z \leq 0.5390</math></p> <p>0.3319 <span style="float: right;">□ N1</span></p>	3	5
		2	5

No.	Solution and Mark Scheme	Sub Marks	Total Marks
13	<p>(a) <math>r - 6</math> <span style="border: 1px solid black; padding: 2px;">P1</span></p> <p><math>(r - 6)^2 + 8^2 = r^2</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p><math>r = 8.333</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p> <p>(b) <math>2 [\sin^{-1} (\frac{8}{*8.333})]</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p><math>147.50^\circ</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p> <p><math>2.574 \text{ rad}</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">N1</span></p> <p>(c) <math>\frac{1}{2} (8.333)^2 [* 2.574 - \sin * 147.50^\circ]</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p><math>70.71 \text{ cm}^2</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p>	3	8
		3	
		2	

No.	Solution and Mark Scheme	Sub Marks	Total Marks
<p><b>14</b></p> <p><b>(a)</b></p>	$\frac{dy}{dx} = 12(1) - 3(1)^2$ <p style="text-align: right; margin-right: 100px;">(K1)</p> $= 9$ <p style="text-align: right; margin-right: 100px;">(N1)</p> $y - 10 = 9(x - 1) \text{ atau } 10 = 9(1) + c$ <p style="text-align: right; margin-right: 100px;">(K1)</p> $y = 9x + 1$ <p style="text-align: right; margin-right: 100px;">(N1)</p>	4	
<p><b>(b)</b></p>	$\frac{dy}{dx} = 12x - 3x^2 = 0$ $3x(4 - x) = 0$ <p style="text-align: right; margin-right: 100px;">(K1)</p> $x = 0, \quad x = 4$ <p style="text-align: right; margin-right: 100px;">(N1)</p> $(0, 5) \quad (4, 37)$ <p style="text-align: right; margin-right: 100px;">(N1)    (N1)</p>	4	8

No.	Solution and Mark Scheme	Sub Marks	Total Marks
15	<p>(a) <math>\frac{y}{x} = 2\left(\frac{1}{x^2}\right) + q</math> <span style="border: 1px solid black; padding: 2px;">P1</span></p> <p><math>\frac{p-5}{3-1} = 2</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p><math>p = 9</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p> <p><math>q = 3</math> <span style="border: 1px solid black; padding: 2px;">N1</span></p> <p>(b) <math>\log \frac{y}{k\sqrt{x}} = \log p</math> <span style="border: 1px solid black; padding: 2px;">P1</span></p> <p><math>\log y = (\log k)\sqrt{x} + \log p</math> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">K1</span></p> <p><math>Y = \log y, X = \sqrt{x}, m = \log k, C = \log p</math> <span style="border: 1px solid black; padding: 2px;">N2</span> semua betul</p> <p><span style="border: 1px solid black; padding: 2px;">N1</span> 3 betul</p>	4	8