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بسم الله الرحمن الرحيم
 في هذا المسألة نريد إيجاد دالة y تحقق المعادلة التفاضلية
 $y' = \frac{x+3}{2x^2+3x^2-11x+3}$ مع الشرط $y(-1) = 0$

$$y = \frac{x+3}{2x^2+3x^2-11x+3}$$

$$x = -1$$

$$\frac{2x^2+3x^2-11x+3}{2x^2+3x^2-11x+3} \Big|_{x=-1} = 0$$

(1)

$$(2x^2+3x^2-11x+3)(x-1)$$

$$\Delta = b^2 - 4ac \rightarrow 11^2 - 4(2)(3) = 49$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$x = \frac{1}{2}, x = -3$$

(2)

$$y = R - \left\{ -\frac{1}{2}, -3 \right\}$$

$$y = \frac{x+3}{2x^2+3x^2-11x+3}$$

$$x = -3$$

$$2x^2+3x^2-11x+3$$

$$\Big|_{x=-3}$$

(3)

$$(2x^2+3x^2-11x+3)(x+1)$$

$$x = -1$$

$$\Delta = b^2 - 4ac \rightarrow 11^2 - 4(2)(3) = 49$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$x = -3$$

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

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$$y = \frac{x+3}{x^2-2x^2+3x-1}$$

$$\frac{x^2-2x^2+3x-1}{x^2-2x^2+3x-1} \Big|_{x=-1} = 0$$

$$(x^2-2x^2+3x-1)(x-1)$$

(1)

$$y = R - \left\{ 1 \right\}$$

$$\Delta = b^2 - 4ac \rightarrow 1^2 - 4(1)(-1) = 5$$

(2)

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$$y = \frac{x+3}{x^2-2x^2+3x-1}$$

$$\frac{x^2-2x^2+3x-1}{x^2-2x^2+3x-1} \Big|_{x=-1} = 0$$

$$x^2-2x^2+3x-1$$

$$(x^2-2x^2+3x-1)(x-1)$$

$$x = 1$$

$$y = (-\infty, -1] \cup (1, +\infty)$$

$$+\frac{1}{x-1} - \frac{1}{x+1}$$

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$$y = \frac{x+3}{x^2-2x^2+3x-1}$$

$$x \geq 1 \Rightarrow x-1$$

$$1-x \Rightarrow x-1$$

(3)

$$x \geq 1 \rightarrow x^2-2x^2+3x-1 = 0 \Rightarrow x^2-2x^2+3x-1 = 0 \Rightarrow (x-1)(x-2) = 0$$

$$x < 1 \rightarrow x^2-2x^2+3x-1 = 0 \Rightarrow x^2-2x^2+3x-1 = 0 \Rightarrow (x-1)(x-2) = 0$$

$$x = 1, x = 2$$

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$$x^2+3x = 0 \Rightarrow x(x+3) = 0 \Rightarrow x = 0, x = -3$$

$$y = R - \left\{ -3, 0 \right\}$$

$$y = \frac{x+3}{|2x+1| - |x+3|} \neq 0$$

(4)

$$(2x+1)^2 \neq (x+3)^2 \Rightarrow 4x^2+4x+1 \neq x^2+6x+9 \Rightarrow$$

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$$3x^2-2x-8 \neq 0 \Rightarrow 3x^2-2x-8 \neq 0$$

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$$y = (-\infty, -\frac{2}{3}) \cup (2, +\infty)$$

$$+\frac{1}{x-1} - \frac{1}{x+1}$$

$$y = \sqrt{|rx+1| - |x+r|} \geq 0 \quad Dy = (-\infty, -\frac{r}{r}] \cup [\frac{r}{r}, +\infty) \quad \text{بـ ٤}$$

$$(rx+1)^2 \geq (x+r)^2 \Rightarrow (rx+1)^2 \geq (x+r)^2 \Rightarrow rx^2 + 2x + 1 \geq x^2 + 2rx + r^2$$

$$\Rightarrow rx^2 - x^2 + 2x - 2rx + 1 - r^2 \geq 0 \Rightarrow rx^2 - 2rx - 1 \geq 0 \Rightarrow x = \frac{2r \pm \sqrt{4r^2 + 4r}}{2r} = \frac{2r \pm 2\sqrt{r^2 + r}}{2r} = 1 \pm \sqrt{1 + \frac{1}{r}}$$

$$y = \log_r(1 - \log_r^x) \quad x > 0 \quad 1 - \log_r^x > 0 \rightarrow \log_r^x < 1 \quad \text{الف ١٥}$$

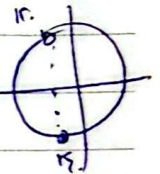
$$Dy = (0, r)$$

$$y = \log_r(1 - \log_{\frac{1}{r}}^x) \quad x > 0 \quad 1 - \log_{\frac{1}{r}}^x > 0 \rightarrow \log_{\frac{1}{r}}^x < 1 \quad \text{بـ ١٠}$$

$$Dy = x > \frac{1}{r}$$

$$y = \log(r \cos x + 1) \quad r \cos x + 1 > 0 \rightarrow r \cos x > -1 \rightarrow \cos x > -\frac{1}{r} \quad \text{الف ١٥}$$

$$R = \left(r\pi - \frac{\pi}{r}, r\pi - \frac{\pi}{r} \right)$$



$$y = \sqrt{\log \frac{x-1}{x+1}} \quad \frac{x-1}{x+1} > 0 \quad x=1; x=-1 \quad \frac{-1}{x+1} = \frac{1}{x+1} \quad (-\infty, -1) \cup (1, +\infty)$$

$$x+1 \neq 0 \rightarrow x \neq -1$$

$$\log \frac{x-1}{x+1} > 0 \Rightarrow \frac{x-1}{x+1} > 1 \Rightarrow x-1 > x+1 \Rightarrow -2 > 2 \Rightarrow \text{no solution}$$

$$Dy = (-\infty, -1)$$

$$f(x) = \sqrt{(a+r)x^r + ax + b} \quad I \text{ of } (a+r)x^r + ax + b > 0$$

$$ax^r + bx + c \quad A = r+a$$

$$b = 8$$

$$B = a$$

$$C = b$$

$$4(a+r) + 8a + b > 0 \rightarrow 4a + 4r + 8a + b > 0 \rightarrow 12a + 4r + b > 0$$

$$f(x) = \sqrt{\log_{\omega}(rx-1)} \quad \text{سؤال ٤}$$

$$\text{I} \quad \log_{\omega}(rx-1) > 0 \rightarrow \log_{\omega} rx-1 \leq 1 \rightarrow rx-1 \leq \omega \Rightarrow x \leq \frac{\omega+1}{r}$$

$$\text{II} \quad \log_{\omega} rx-1 > 0 \Rightarrow rx-1 > 1 \Rightarrow rx > 2 \Rightarrow x > \frac{2}{r}$$

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$$\text{III} \quad rx-1 > 0 \rightarrow rx > 1 \Rightarrow x > \frac{1}{r} \quad \text{I, II, III} \Rightarrow x > \frac{1}{r}$$

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$$f(x) = \sqrt{x^r + rx + r - m^r} \geq 0$$

(9)

جواب: $(x^r + rx + 1) + (r - m^r - 1) = (1 - m^r) + (x + 1)^r$

5 $(1 - m^r) + (x + 1)^r \geq 0 \rightarrow 1 - m^r \geq 0 \rightarrow 1 \geq m^r \rightarrow -1 \leq m \leq 1$
 $(x + 1)^r \geq 0 \rightarrow x = -1$ مؤلفه

$1 - (-1) = 2 \rightarrow \min(m) - \max(m)$
 $+1$

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$$f(x) = \frac{\sqrt{r - x^r}}{[x] + [-x] + 1}$$

(10)

$r - x^r \geq 0 \Rightarrow r \geq x^r \Rightarrow -r \leq x \leq r \quad \text{Dy} = [-r, r]$

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$\left. \begin{array}{l} -1 \quad x \notin \mathbb{Z} \\ -r \quad x \in \mathbb{Z} \end{array} \right\} [-x] + [x]$
 $\left. \begin{array}{l} 0 \quad x \notin \mathbb{Z} \\ -1 \quad x \in \mathbb{Z} \end{array} \right\} = [-x] + [x] + 1$
نتیجه یا عبارت یابشی

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جواب: $\{2, 1, 0, -1, -2\}$ مقدار

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