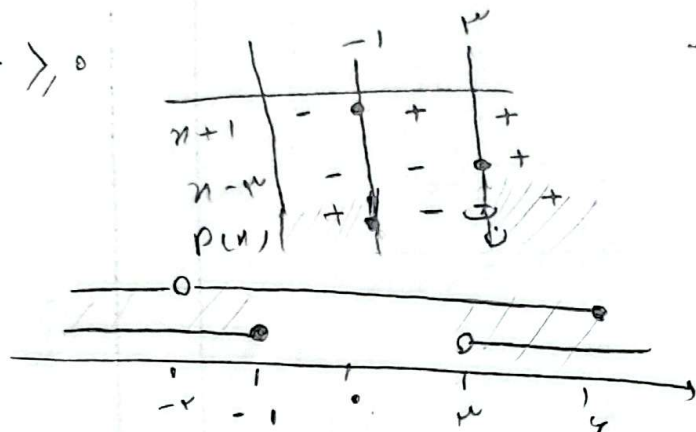


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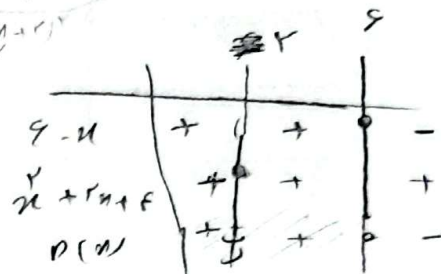
الف

$$\sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{5-x}{x^2+rx+f}} =$$

$$\frac{x+1}{x-3} > 0$$



$$\frac{5-x}{x^2+rx+f} > 0$$



$$(3, 5] \cup (-\infty, -1] - \{-3\}$$

ب

$$\sqrt{[x]-f} + \sqrt{r-[x]}$$

$$[x]-f > 0$$

$$r-[x] > 0$$

$$[x] > f$$

$$r > [x]$$

$$x > f$$

$$(-\infty, r)$$



لا شيء

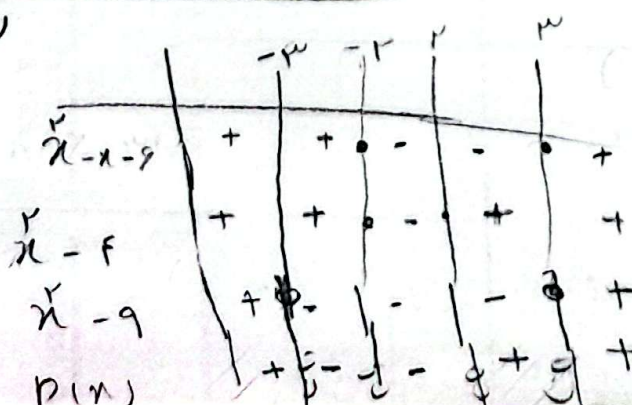
$$(-\infty, 3) \cup (r, 3) \cup (3, +\infty)$$

الف

$$\frac{x^2 - x - 6}{(x^2 - 4)(x^2 - 9)} > 0$$

$$\frac{x^2 - x - 6}{(x^2 - 4)(x^2 - 9)} > 0$$

$$\frac{x^2 - x - 6}{(x^2 - 4)(x^2 - 9)}$$



الف

نفا، صباغی

$$2x^2 + y^2 - fx + gy + k = 0$$

$$(y + m)^2 + 2x^2 - fx + m = 0$$

$$k = 39 + r = 211$$

$$k = 11$$

$$\Delta = 0$$

$$2x^2 + y^2 - fx + gy + 11 = 0$$

$$(y + m)^2 + 2(x - 1)^2 = 0$$

دایره ثابت است و مرکز آن (1, -1) است

$$a + fa = ra + r$$

$$a + ra = 0$$

$$(a + r)(a - r) = -r^2$$

$$x + fx, x \gg 1$$

$$rx + 1 + r, x \ll 1$$

$$1 + r \rightarrow \omega$$

$$\phi(1) = 0$$

$$2x - b$$

$$2x - b$$

$$a + rx, r \ll 1, x \ll 1$$

$$x \gg 1$$

$$x, r \ll 1$$

$$x + 1, r \ll 1, x \gg 1$$

$$x + 1, r \ll 1, x \ll 1$$

$$a + b = r^2$$

$$11 - b = a - r$$

$$rf = a + b$$

$$y = \sqrt{9x - a} + \sqrt{b - rx}$$

$$0 = \sqrt{11 - a} + \sqrt{b - r}$$

$$11 - a = 0$$

$$a = 11$$

$$b = 9$$

$$\frac{b}{a} = \frac{9}{11} = \frac{1}{r}$$

$$\frac{b}{a} = \frac{1}{r}$$

(r

(r

- y

- 1

ب (9)

$$f(x) = x^3 - 2x^2 - 5x + 6 = (x-1)(x+2)(x-3) \rightarrow 1, -2, 3$$

$$g(x) = x^3 + 2x^2 - 5x - 6 = (x+1)(x-2)(x+3) \rightarrow -1, 2, -3$$

$A \geq 0$

$-1, -2, -3, -4$

	$x-1$	$x+2$	$x-3$	$x+1$	$x-2$	$x+3$	$p(x)$
-1	-	-	-	+	+	+	+
-2	-	+	-	+	+	+	+
-3	-	-	-	-	-	+	+
-4	-	-	-	-	-	+	+
0	-	-	-	-	-	+	+
1	+	+	+	+	+	+	+
2	+	+	+	+	+	+	+
3	+	+	+	+	+	+	+
4	+	+	+	+	+	+	+

$$(-\infty, -3) \cup [-2, -1) \cup [1, 2) \cup [3, +\infty)$$

^

$$\sqrt{[-x] - 2} \quad [-x] - 2 \geq 0$$

$$[-x] \geq 2$$

$$(-\infty, -2]$$

الف (10)

$$[x]^2 - 2[x] - 3 = 0$$

$$[x]^2 - 2[x] = 3$$

$$[x]([x] - 2) = 3$$

$$\mathbb{R} = [-3, 4) \cup [-1, 0)$$

$$A^2 - 2A - 3 = 0 \quad \begin{cases} A = -1 \\ A = +3 \end{cases}$$

$$[x] \neq 3 \quad [3, 4)$$

$$[x] \neq -1 \rightarrow [-1, 0)$$

$$[-3, 4) \cup [-1, 0)$$

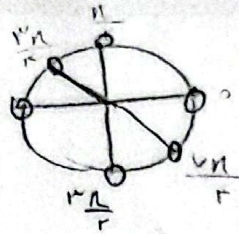
ب (10)

(1)

$$\text{الف) } y = \frac{\cot x + 1}{\tan x + 1}$$

$$\tan x + 1 = 0$$

$$\tan x = -1$$



$$R = \left[\sqrt{k}n, \frac{n}{r} + \sqrt{k}n, \frac{\sqrt{k}n}{r} + \sqrt{k}n, \right. \\ \left. (\sqrt{k}+1)n + \frac{\sqrt{k}n}{r} + \sqrt{k}n, \frac{\sqrt{k}n}{r} + \sqrt{k}n \right]$$

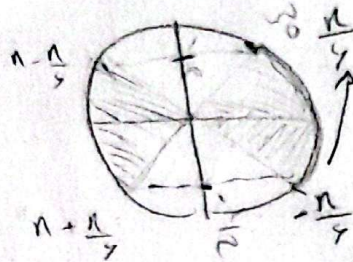
$$\text{ب) } \sqrt{1 - f \sin x}$$

$$1 - f \sin x > 0$$

$$-f \sin x > -1$$

$$f \sin x < 1$$

$$\sin x < \frac{1}{f} \Rightarrow -\frac{1}{f} < \sin x < \frac{1}{f}$$



$$\left[-\frac{n}{f}, \frac{n}{f} \right] \cup \left[n - \frac{n}{f}, n + \frac{n}{f} \right]$$

$$\left[\sqrt{k}n - \frac{n}{f}, \sqrt{k}n + \frac{n}{f} \right] \cup$$

$$\left[n(\sqrt{k}+1) - \frac{n}{f}, n(\sqrt{k}+1) + \frac{n}{f} \right]$$

$$x-1 > 0$$

$$(x > 1)$$

$$1 - \log_f \frac{x-1}{f} > 0$$

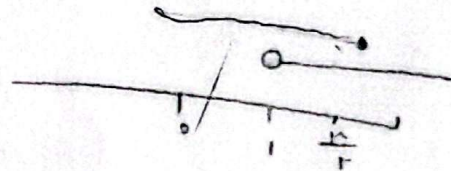
$$- \log_f \frac{x-1}{f} > -1$$

$$\log_f \frac{x-1}{f} < 1$$

$$\log_f \frac{x-1}{f} = \log_f \frac{f}{f}$$

$$x-1 < f$$

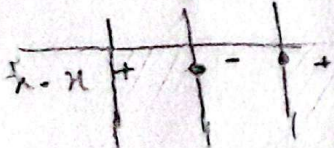
$$x < f+1$$



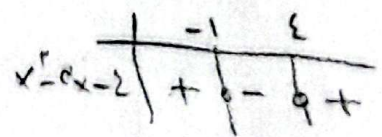
$$\left(1, \frac{f}{f} \right]$$

الف (9)

$$x - n > 0 \quad (-\infty, 0] \cup [1, +\infty)$$



$$R = (-\infty, -1) \cup (2, +\infty)$$



$$1 - \log_f \frac{x-n}{f} = 0$$

$$\log_f \frac{x-n}{f} = 1 \Rightarrow \log_f \frac{x-n}{f} = \log_f f$$

$$\Rightarrow \log_f \frac{x-n}{f} = \log_f f$$

$$\frac{x-n}{f} = f \\ x-n = f^2 \\ (x-n)(x-n) = f^2 \\ x-n = f$$

$$\text{الف} \Rightarrow y = \sqrt{\frac{fx - a}{r - 1}}$$

(1. الف)

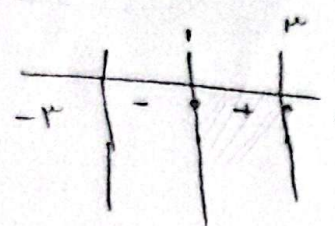
$$\frac{fx - a}{r - 1} \geq 0$$

$$R = [1, r]$$

$$\frac{fx - a}{r} \geq 1$$

$$\frac{fx - a}{r} \geq 1 \Rightarrow fx - a \geq r$$

$$fx - a - r \geq 0$$

$$1 - \frac{a}{r} + \frac{f}{r}x - \frac{r}{r} = \frac{-a + fx - r}{r}$$


$$\frac{-a + fx - r}{r} \geq 0 \Rightarrow \textcircled{2} \textcircled{1}$$

(1. الف)

$$\frac{rx + a}{rx + f} \in W$$

$$Df = \left\{ x \mid x = \frac{a - fk}{rk - r}, k \in W \right\}$$

$$W(rx + f) = rx + a$$

$$rxw + fw - rx = a$$

$$rxw - rx = a - fw$$

$$x(rxw - r) = a - fw$$

$$x = \frac{a - fw}{rxw - r}$$

$$x = \frac{a - fk}{rk - r}$$