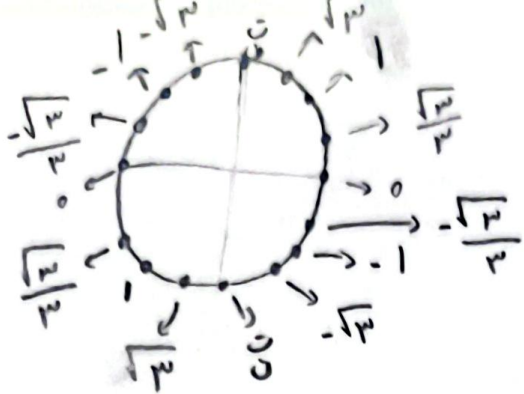




$$a) \frac{1}{r} + (-1) + r \times (-1) = -r, a$$

$$b) \frac{\sqrt{r}}{r} + \frac{\sqrt{r}}{r} - r \left( -\frac{\sqrt{r}}{r} \right) = a \frac{\sqrt{r}}{r}$$

$$c) -\frac{\sqrt{r}}{r} + r \frac{\sqrt{r}}{r} - r \left( -\frac{\sqrt{r}}{r} \right) = r \frac{\sqrt{r}}{r}$$

$$d) 1 + 1 = r$$

$$ar + ra = ra + ar + r$$

$$\begin{cases} rx^r + r^r x & x \geq r \\ rx + r + r & x \leq r \end{cases} \rightarrow r(1) + r = 4$$

$$ar + a - r = 0$$

$$\begin{cases} a = r \\ a = -1 \end{cases}$$

$$f(x) = \begin{cases} rx^r - b & x \geq r \\ a + rx & x \leq -r \\ a + rx & -r \leq x \leq -1 \end{cases} \xrightarrow{x = -r} \begin{cases} b = a - 9 \\ rf = b + a \end{cases}$$

$$a) \quad R - \{0, r\}$$

$$b) \quad R - \{-r\}$$

$$\text{الف) } \sqrt{x^2-1} + \sqrt{x-2} = [2, \infty)$$

-6

$$\downarrow \quad \downarrow x \geq 2$$

$$(-\infty, -1] \cup [1, \infty)$$

$$\text{ب) } \frac{\sqrt{5-3x}}{\sqrt{5x-3}} \rightarrow (-\infty, 2] \Rightarrow (-\infty, \frac{1}{2}] - \{\frac{1}{2}\}$$

$$\sqrt{5x-3} \rightarrow (-\infty, \frac{1}{2}]$$

$$b - rx \geq 0 \quad \frac{b}{r} \geq x$$

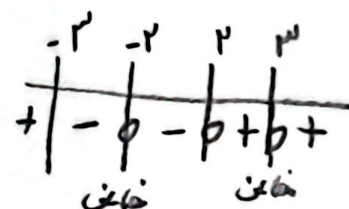
$$\frac{b}{r} \leq x \leq \frac{a}{y} \quad \frac{a}{y} \leq x \leq \frac{b}{r}$$

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

-7

$$\text{الف) } y = \sqrt{\frac{x^2 - x - 6}{x^4 - 13x^2 + 36}}$$

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



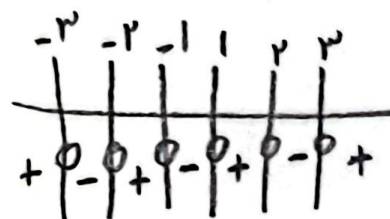
-8

$$\text{ب) } \sqrt{\frac{(x-1)(x^2-x-6)}{(x+1)(x^2+x-6)}}$$

$$\downarrow \quad \downarrow$$

$$-1, 3, -2$$

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



$$(-\infty, -3] \cup [-2, -1] \cup [1, 2] \cup [3, \infty) - \{-1, 2, -2\}$$

$$\text{الف) } \rightarrow [2, \infty)$$

-9

$$\text{ب) } \rightarrow (3, \infty)$$

$$\text{الف) } \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{5-x}{x^2+2x+1}} \rightarrow (x+1)^{1/2} + 1 \rightarrow \mathbb{R}$$

$$\rightarrow -1 \leq x \leq 4 - \{2\}$$

-10

$$\text{ب) } \emptyset$$