

سوال ۲:

$$y = \frac{x+r}{x^2-fx} \rightarrow x^2-fx = x(x-f) \neq 0 \rightarrow x \neq 0, x \neq f \quad \neq \quad D = \mathbb{R} - \{0, f\}$$

$$y = \frac{x+f}{x^2-4x+4} \rightarrow \Delta = (b)^2 - 4 \times 1 \times 4 = 16 - 16 = 0 < 0 \quad \neq \quad D = \mathbb{R}$$

$$y = \frac{x+f}{x^2+4x+f} \rightarrow \Delta = 1^2 - 4 \times 1 \times f = 1 - 4f = -12 < 0 \quad \neq \quad D = \mathbb{R}$$

$$y = \frac{x+f}{x^2-fx^2} \rightarrow x^2(x^2-f) = x^2(x-r)(x+r) \rightarrow \begin{matrix} x \neq 0 \\ x \neq r \\ x \neq -r \end{matrix} \quad \neq \quad D = \mathbb{R} - \{0, \pm r\}$$

سوال ۳:

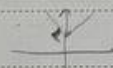
$$y = \frac{\sqrt{x-r}}{x} \rightarrow \begin{matrix} x-r \geq 0 & x \geq r \\ x > 0 & x > 0 \end{matrix} \quad \rightarrow \quad (-\infty, 0) \cup [r, +\infty)$$

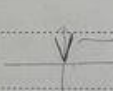
$$y = \frac{x^2+1}{x^2+1} \rightarrow x^2+1 \neq 0 \rightarrow \neq \quad D = \mathbb{R}$$

$$y = \frac{\sqrt{x-r}}{x-f} \rightarrow \begin{matrix} x-r \geq 0 & x \geq r \\ x-f > 0 & x > f \end{matrix} \quad \rightarrow \quad (f, +\infty)$$

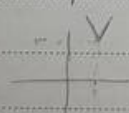
$$y = \frac{rx+r}{|x|+x^2} \rightarrow \begin{matrix} |x|+x^2 \neq 0 \\ |x| \neq -x^2 \end{matrix} \quad \neq \quad D = \mathbb{R} \quad [r, +\infty)$$

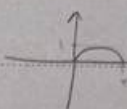
سوال ۴: $y = |x| \rightarrow$ 

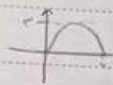
$y = |x| + r$ 

$y = r|x|$ 

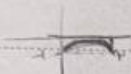
$y = |x+r|$ 

$y = |x+r| + r$ 

سوال ۵: $f(x) =$ 

$f(x) + r =$ 

$r f(x) =$ 

$f(x-1) =$ 

$-f(x) =$ 

$y = (x-r)(x-r)(x-r)$ $x \begin{array}{c|c|c|c|c} & r & r & r & \\ \hline & - & + & - & + \end{array}$

سوال ۶:

$y = (x-r)(x-r)'(x-r)$ $x \begin{array}{c|c|c|c|c} & r & r' & r & \\ \hline & + & - & + & - \end{array}$

$y = \frac{(x-r)(x-r)}{x-r}$ $x \begin{array}{c|c|c|c|c} & r & r & r & \\ \hline & - & + & - & + \end{array}$

سوال ۷:

$y = \frac{(x-r)(x-r)}{(x-r)'}$ $x \begin{array}{c|c|c|c|c} & r & r' & r & \\ \hline & + & - & + & - \end{array}$

سوال ۸:

$y = \frac{x^2 - rx + r}{x-r} \rightarrow \frac{(x-1)(x-r)}{x-r}$ $x \begin{array}{c|c|c|c|c} & r & r & r & \\ \hline & - & + & - & + \end{array}$

$y = \frac{x^2 - rx + r}{x^2 - rx + r} \rightarrow \frac{(x-1)(x-r)}{(x-1)(x-r)} + \frac{1}{1} + \frac{r}{r} + \frac{r}{r}$

$y = \frac{x^2 - x^2}{x^2 + x + r} \rightarrow \frac{(x^2 + x)(x^2 - x)}{x^2 + x + r}$ $x \begin{array}{c|c|c|c|c} & -1 & 0 & 1 & \\ \hline & + & + & - & + \end{array}$

سوال ۹:

$\Delta = b^2 - 4ac = x^2 - 4(x^2 + x + r) = x^2 - 4x^2 - 4x - 4r = -3x^2 - 4x - 4r$

$y = \frac{x^2 + rx + r}{x^2 + rx + r} \rightarrow \frac{r}{r} + \frac{1}{1} + \frac{r}{r}$

$$y = \sqrt{\frac{x^r - 1}{x^r - x}} \rightarrow \frac{x^r - 1}{x^r - x} \Rightarrow x^r - x \neq 0 \quad \text{for } x^r \neq x \quad \text{Domain: } \mathbb{R} - \{0, 1\} \quad (\text{واله})$$

$$y = \sqrt{\frac{x^r - 1}{x^r - x + r}} \rightarrow \frac{x^r - 1}{x^r - x + r} \neq 0 \quad \text{Domain: } \mathbb{R} - \{1, r\}$$

$$y^r - x = rx^r \Rightarrow y^r = x + rx^r \rightarrow y = \sqrt[r]{x + rx^r} \quad (\text{واله})$$

$$|y| + x^r = x + r \rightarrow |y| = x + r - x^r \rightarrow y = \pm (x + r - x^r) \quad (\text{واله})$$

$$\sqrt{x - r} + |y - r| = 0 \rightarrow \sqrt{x - r} = 0 \rightarrow x = r \rightarrow |y - r| = 0 \rightarrow y = r \quad (\text{واله})$$

$$x = \cos y \quad \text{for } y \in [0, \pi] \quad \text{Domain: } \mathbb{R} \text{ and } \mathbb{R}^+ \text{ and } \mathbb{R}^-$$