

4

الف) $xy^3 = -x^2 - 1$ $x=0 \Rightarrow y^3 = -1$

$$\begin{cases} y_1^3 = -x_1^2 - 1 \\ y_2^3 = -x_2^2 - 1 \end{cases} \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$$

مستقیم است (۲)

ب) $xy^2 - 12y = -x^2 + 2x - 10$

$xy^2 - 12y + 9 + x^2 - 2x + 1 = 0$

$(xy - 3)^2 + (x - 1)^2 = 0 \rightarrow$ نقطه $\left| \frac{1}{x} \right|$ تابع هست

الف) $x=0 \rightarrow \sin y = y \times \sin 0 \Rightarrow y = R \Rightarrow$ تابع نیست (۷)

ب) $\sqrt{\frac{x}{y}} = \sqrt{\frac{y}{x}} = 1 \Rightarrow y = x \Rightarrow$ تابع هست

با این $\left(\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} \right)^2 = 2 \quad \frac{x}{y} + \frac{y}{x} + 2 = 2 \quad \frac{x^2 - y^2}{xy} = 0$

$x^2 + y^2 = 2xy \quad x^2 - 2xy + y^2 = 0 \quad (x - y)^2 = 0 \quad \boxed{x=y} \quad xy \neq 0$

الف) $\sqrt{\frac{x-1}{x-2}} + \sqrt{\frac{2-x}{x}} \quad x=1, 2, 0$

$\frac{x-1}{x-2} \geq 0 \Rightarrow \frac{1}{x-2} \geq 0 \Rightarrow x < 2$

$\frac{2-x}{x} \geq 0 \Rightarrow \frac{2}{x} \geq 1 \Rightarrow x \leq 2$

$(-\infty, 1] \cup (0, 2)$ (۱)

$DU(x) = \log 1$

1,50

ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3}$ $x \geq 0$

$\sqrt{y-1} = \sqrt{3} - \sqrt{x}$

$\sqrt{3} - \sqrt{x} \geq 0 \Rightarrow 0 \leq x \leq 3$

$$\text{ج) } \sqrt{\frac{n^2 - 5n + 4}{n^2 - 10n + 19}}$$

$$\frac{n^2 - 5n + 4}{n^2 - 10n + 19} \geq 0 \quad 1, 4, 9, 16$$

9

$$\frac{(n-1)(n-4)}{(n-2)(n-1)}$$

4

$$\begin{array}{c} 1 \quad 2 \quad 4 \quad 16 \\ + \quad - \quad + \quad - \quad + \\ (-\infty, 1] \cup (2, 4] \cup (16, +\infty) = Df \end{array}$$

$$\text{الف) } \sqrt{\frac{2n^2 - 2n + 3}{3n^2 - 5n + 2}}$$

$$2n^2 - 2n + 3 \geq 0 \quad n = 1, \frac{1}{2}$$

10

$$2n^2 - 5n + 2 \geq 0 \rightarrow n = 1, \frac{2}{5}$$

$$\begin{array}{c} 1 \quad \frac{1}{2} \\ + \quad - \quad + \\ (-\infty, 1] \cup [\frac{1}{2}, +\infty) \end{array}$$

$$\begin{array}{c} 1 \quad \frac{2}{5} \\ + \quad - \quad + \\ (-\infty, 1) \cup (\frac{2}{5}, +\infty) \end{array}$$

$$\star \cap \star \rightarrow (-\infty, 1) \cup [\frac{1}{2}, +\infty)$$

4

$$\text{ج) } \sqrt{\frac{2n^2 - 2n + 3}{3n^2 - 5n + 2}} \geq 0$$

$$n = 1, \frac{1}{2}, 1, \frac{2}{5}$$

$$\begin{array}{c} \star \\ 1 \quad \frac{1}{2} \quad \frac{2}{5} \\ + \quad - \quad + \quad - \quad + \end{array}$$

$$Df = (-\infty, \frac{1}{2}) \cup [\frac{1}{2}, +\infty) - \{1\}$$

سوال (9) قسمت الف

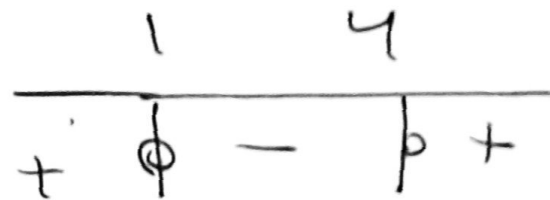
$$(m-1)(m-4) \geq 0$$

$$(17-9m) \geq 0 \quad m = 194, \frac{14}{9}$$



$$\sqrt{m^2 - 5m + 4}$$

$$\sqrt{-9m + 14}$$



$$(-\infty, 1] \cup [4, +\infty) \quad \star \star$$

$$14 - 9m \geq 0$$



$$m < 14$$

$$m < \frac{14}{9} \quad \star$$

$$\star \cap \star \star \rightarrow (-\infty, 1]$$