

$$A = \{1, 2, 3\}$$

$$B = \{2, 3\}$$

$$A \times B - B^2 = \emptyset$$

$$A \times B = \{(1, 2), (1, 3), (2, 2), (2, 3), (3, 2), (3, 3)\}$$

$$B^2 = B \times B = \{(2, 2), (2, 3), (3, 2), (3, 3)\}$$

$$A \times B - B^2 = \{(1, 2), (1, 3), (2, 2), (2, 3), (3, 2), (3, 3)\} - \{(2, 2), (2, 3), (3, 2), (3, 3)\} = \{(1, 2), (1, 3)\}$$

$$f(x) = \{(x, m^2), (x, 1), (x, -2), (x, m), (x, m+2), (x, m+1)\}$$

موقع دوم یکسان $\rightarrow$ موقع اول یکسان : شرط تابع

$$m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m+1)(m-2) = 0$$

$$m = 2 \text{ یا } -1$$

$$m = 2 \Rightarrow f(x) = \{(x, 4), (x, 1), (x, -2), (x, 2), (x, 4), (x, 3)\} \rightarrow m = 2 \text{ غنای}$$

$$m = -1 \Rightarrow f(x) = \{(x, 1), (x, 1), (x, -1), (x, -1), (x, 0), (x, -2)\} \rightarrow m = -1 \text{ قابل قبول}$$

$$f(x) = \{(x, m^2), (x, 1), (x, m+2), (x, m), (x, m+1)\} \rightarrow m^2 = m + 2 \rightarrow m = 2 \text{ یا } -1 \rightarrow f(x) = \{(x, 4), (x, 1), (x, -2), (x, 2), (x, 4), (x, 3)\}$$

$$f(x) = \begin{cases} x^2 - 1 & x \leq 1 \\ ax + b & 1 \leq x \leq 2 \\ x^2 & x \geq 2 \end{cases}$$

$$x = 1 \rightarrow f(1) = 1 - 1 = 0$$

$$f(1) = a(1) + b = a + b$$

$$a + b = 0 \rightarrow b = -a$$

$$x = 2 \rightarrow f(2) = 4 + b$$

$$f(2) = 4$$

$$4 + b = 4 \rightarrow b = 0 \rightarrow a = 0$$

$$a \times b = -4$$

$$f(x) = \begin{cases} 2x - 3 & x \geq k \\ k - 3x & x \leq k \end{cases}$$

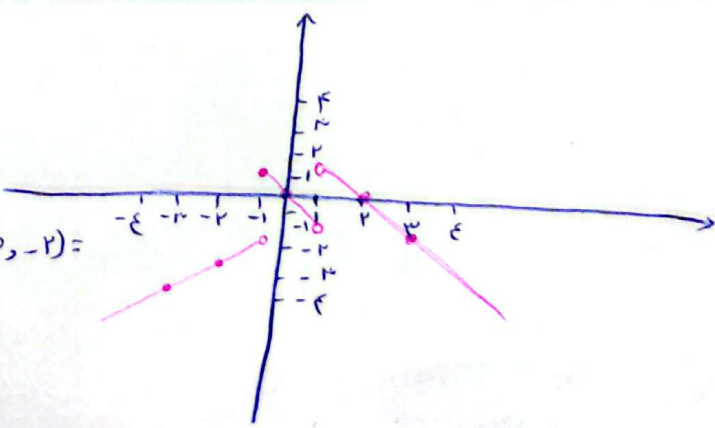
$$k \Rightarrow 2k - 3 = k - 3k$$

$$k = 1 \rightarrow k = \frac{1}{2}$$

$$f(x) = \begin{cases} -x + 2 & x < 1 \\ -x & -1 \leq x < 1 \\ x - 1 & x \geq 1 \end{cases}$$

$$D = \mathbb{R} - \{1\}$$

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



$$xy'' + x^2 + 1 = 0 \xrightarrow{x_1 = x^2} y_1 = y_2 \rightarrow xy_1'' = xy_2'' \rightarrow y_1'' = y_2'' \rightarrow y_1 = y_2 \checkmark$$

تابع هست

$$x^2 + xy'' - 12y + 1 = 0 \rightarrow (x^2 - 12x + 1) + (xy'' - 12y + 9) = 0 \rightarrow (x-1)^2 + (2y-3)^2 = 0$$

$x=1 \rightarrow y=\frac{3}{2}$

[$\frac{1}{2}$] $\rightarrow$ در این نقطه تابع $\rightarrow$ تابع هست

$$x \sin y = y \sin x \xrightarrow{x=0} 0 \cdot \sin y = y \cdot \sin 0 \rightarrow 0 = 0 \checkmark$$

تابع نیست

$$\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \xrightarrow{\text{مربع کردن}} \frac{x}{y} + \frac{y}{x} + 2\sqrt{\frac{x}{y} \cdot \frac{y}{x}} = 4 \rightarrow \frac{x^2 + y^2}{xy} = 2 \rightarrow x^2 + y^2 - 2xy = 0$$

$$(x-y)^2 = 0 \rightarrow x=y \checkmark$$

تابع هست - برای هر x یک y دارد

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

$$\frac{x-1}{x-3} \geq 0 \quad \frac{x}{x-3} \geq 0$$

*ج.م = $(-\infty, 1] \cup (3, +\infty)$

*نقطه = $[0, 1]$

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

$$\begin{cases} x \geq 0 \\ y \geq 0 \end{cases} \rightarrow \sqrt{y} - 1 = \sqrt{3} - \sqrt{x} \rightarrow \sqrt{3} - \sqrt{x} \geq 0 \rightarrow \sqrt{x} \leq \sqrt{3} \rightarrow x \leq 3$$

$$\begin{cases} y-1 \geq 0 \rightarrow y \geq 1 \\ x=3 \rightarrow \sqrt{y}-1=0 \rightarrow y=1 \\ x=0 \rightarrow \sqrt{y}-1=\sqrt{3} \rightarrow y=4 \end{cases} \rightarrow 1 \leq y \leq 4$$

$$y = \frac{\sqrt{x^2 - \sqrt{x} + 4}}{\sqrt{x^2 - 10x + 14}}$$

$$x^2 - \sqrt{x} + 4 = 0 \rightarrow (x-1)(x-4) = 0$$

$$x^2 - 10x + 14 = 0 \rightarrow (x-2)(x-8) = 0$$

*ج.م = $(-\infty, 1] \cup (4, +\infty)$

$$y = \sqrt{\frac{x^2 - \sqrt{x} + 4}{x^2 - 10x + 14}}$$

ج.م = $(-\infty, 1] \cup (2, 4] \cup (8, +\infty)$

$$y = \frac{\sqrt{2x^2 - 5x + 3}}{\sqrt{3x^2 - 7x + 4}}$$

$$2x^2 - 5x + 3 = 0 \rightarrow x^2 - 5x + 4 = 0$$

$$3x^2 - 7x + 4 = 0 \rightarrow x^2 - 7x + 4 = 0$$

ج.م = $(-\infty, 1] \cup [\frac{4}{3}, +\infty) \cap ((-\infty, 1) \cup (\frac{4}{3}, +\infty)) = (-\infty, 1) \cup [\frac{4}{3}, +\infty)$

$$y = \sqrt{\frac{2x^2 - 5x + 3}{3x^2 - 7x + 4}}$$

ج.م = $(-\infty, 1) \cup (1, \frac{4}{3}) \cup [\frac{4}{3}, +\infty)$