

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

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

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

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

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

الف) $3 = 2 \rightarrow m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m - 2)(m + 1) = 0$
 $\hookrightarrow m = 2 \quad \hookrightarrow m = -1$
 $\alpha(2, 1), (2, 4) \leftarrow$

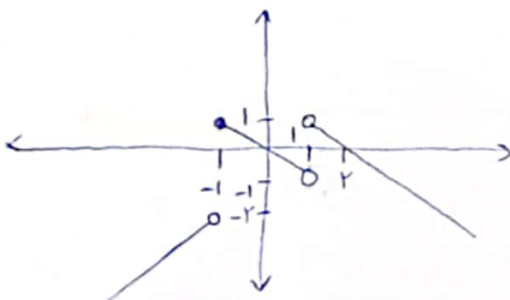
ب) $3 = 3 \rightarrow m^2 = m + 2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m - 2)(m + 1) = 0$
 $\hookrightarrow m = 2 \quad \hookrightarrow m = -1$
 $\alpha(-1, 3), (-1, 4) \leftarrow$

if $n = 1 \rightarrow n^2 - 1 = a n + b \rightarrow 0 = a + b$
 if $n = 2 \rightarrow n^3 = a n + b \rightarrow 1 = 2a + b$ } $a = 1, b = -1$

$$a \times b = 1(-1) = -1$$

if $n = k \rightarrow 2n - 3 = 5 - 3n \rightarrow \Delta n = 7$

$$\rightarrow n = \frac{V}{\Delta} = 1, 4 \rightarrow k = 1, 4$$



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

$$R_f = (-\infty, 1]$$

الف) $xy^2 = -x^2 - 1$ $\xrightarrow{\text{تعرین ریاضی}}$ $xy^2 = -x^2 - 1$ $\xrightarrow{y_1 = y_2}$ $xy^2 = -x^2 - 1$ $\xrightarrow{y_1 = y_2}$ $xy^2 = -x^2 - 1$

تابع است.

ب) $x^2 + 4y^2 - 2x - 12y + 10 = 0 \rightarrow (x-1)^2 + (2y-3)^2 = 0$

نقطه $(\frac{1}{2}, \frac{3}{2})$

تابع است.

الف) $x \sin y = y \sin x$ $\xrightarrow{\text{مثال نقض}}$ $\text{if } x = 0$

$\rightarrow 0 = y (\sin 0) \rightarrow y = 1R$

تابع نیست.

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \rightarrow t + \frac{1}{t} = 2 \rightarrow t^2 - 2t + 1 = 0$

$\rightarrow (t-1)^2 = 0 \rightarrow t = \sqrt{\frac{x}{y}} = 1 \rightarrow \frac{x}{y} = 1 \rightarrow y = x$

تابع است.

الف) $y = \sqrt{\frac{x-1}{x-3}} + \sqrt{\frac{x-2}{x}}$ $D_f = (0, 1] \cup [2, +\infty)$

$\frac{1}{+} - \frac{3}{-} +$

$\frac{0}{-} + \frac{2}{+} -$

$(-\infty, 0] \cup (3, +\infty)$

ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3} \rightarrow x \geq 0$ $D_f = [0, 3]$

چون x باید از 0 شروع شود

الف) $\frac{\sqrt{x^2 - 7x + 4}}{\sqrt{x^2 - 10x + 14}} = \frac{\sqrt{(x-1)(x-4)}}{\sqrt{(x-2)(x-1)}}$ $\frac{1}{+} - \frac{4}{-} +$ $(-\infty, 1] \cup [4, +\infty)$

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

ب) $D_f = (-\infty, 1] \cup (4, +\infty)$

الف) $\frac{\sqrt{x^2 - 7x + 4}}{\sqrt{x^2 - 10x + 14}} = \frac{\sqrt{(x-1)(x-4)}}{\sqrt{(x-2)(x-1)}}$ $\frac{1}{+} - \frac{4}{-} +$ $(-\infty, 1] \cup [4, +\infty)$

$D_f = (-\infty, 1] \cup (2, 4] \cup (1, +\infty)$

الف) $y = \frac{\sqrt{2x^2 - 5x + 3}}{\sqrt{3x^2 - 7x + 4}}$ $\xrightarrow{\text{ریشه ها}}$ $(x-2)(x-3) \rightarrow \frac{2}{3} \text{ و } \frac{3}{2}$

$\xrightarrow{\text{ریشه ها}}$ $(x-2)(x-4) \rightarrow \frac{2}{3} \text{ و } \frac{4}{3}$

$\frac{1}{+} - \frac{3}{-} +$ $\frac{1}{+} - \frac{4}{-} +$

ب) $D_f = (-\infty, 1) \cup [\frac{3}{2}, +\infty)$

الف) $y = \sqrt{\frac{2x^2 - 5x + 3}{3x^2 - 7x + 4}}$ $\frac{1}{+} - \frac{3}{-} +$ $\frac{1}{+} - \frac{4}{-} +$

$\frac{2}{+} - \frac{3}{-} +$ $\frac{4}{+} - \frac{3}{-} +$

$D_f = (-\infty, 1) \cup (2, \frac{4}{3}) \cup [\frac{3}{2}, +\infty)$