

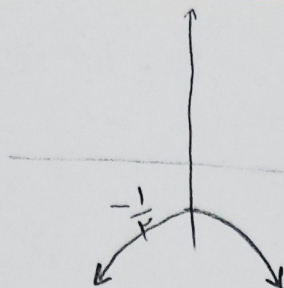
الف) $x^2 + y^2 + 1 = 0$

$y^2 = -x^2 - 1$
 $y = -\frac{1}{2}x^2 - \frac{1}{2}$

ب)

$x^2 + y^2 - 2x - 12y + 10 = 0$

$(x^2 - 2x + 1) + (y^2 - 12y + 9) = (x-1)^2 + (y-3)^2 = 0 \rightarrow \begin{matrix} x=1 \\ y=3 \end{matrix}$
 فقط نقطه قابل
 مدقق شده و پاسخ ۱



$b^2 - 4ac = 0 - 4(-\frac{1}{2})(-\frac{1}{2}) = -1$
 $\frac{-b}{2a} = \frac{+1}{-2} = -\frac{1}{2}$

که طبق شکل خطی برابر صفر و آن را
 دو بار قطع نمائید، و متغیر به فرد عمل
 می کنند

4

$x=0 \rightarrow \sin 0 = 0$ مثال نقض

الف) $x \sin y = y \sin x \rightarrow$ در این حالت y
 در $\sin y$ هر عددی می تواند باشد

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2$

$\frac{x}{y} + \frac{y}{x} + 2\sqrt{\frac{xy}{ym}} = 2 \rightarrow \frac{x^2 + y^2}{xy} = 2 \rightarrow x^2 + y^2 = 2xy \rightarrow (x-y)^2 = 0 \rightarrow x=y$

دو متغیر به فرد عمل می کنند و پاسخ ۱ است

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

$\frac{x-1}{x-3} \geq 0 \rightarrow \begin{matrix} 1 & 3 \\ + & - & + \\ \hline & 0 & 0 \end{matrix}$
 $\frac{x-3}{x} \geq 0 \rightarrow \begin{matrix} & 0 & 3 \\ + & - & + \\ \hline & 0 & 0 \end{matrix}$
 $D_f = (0, 1] \cup [3, +\infty)$

ب) $\sqrt{x} + \sqrt{y-1} = \sqrt{3}$

$x \geq 0, x \leq 9 \rightarrow 0 \leq x \leq 9$
 $y-1 \geq 0, y-1 \leq 9, y \leq 10 \rightarrow 1 \leq y \leq 10$

$D_f = [0, 9]$

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الف) $y = \frac{\sqrt{x^2 - 5x + 4}}{\sqrt{x^2 - 10x + 14}}$

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

$(x-1)(x-2) \geq 0$

$\begin{matrix} 1 & 4 \\ + & - & + \\ \hline & 0 & 0 \end{matrix}$
 $\begin{matrix} 1 & 2 & 4 \\ + & - & + \\ \hline & 0 & 0 \end{matrix}$
 $D_f = (-\infty, 1] \cup (4, +\infty)$

ب) $y = \sqrt{\frac{x^2 - 5x + 4}{x^2 - 10x + 14}}$

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

$(x-1)(x-2) \geq 0$

$\begin{matrix} 1 & 2 & 4 & 1 \\ + & - & + & - \\ \hline & 0 & 0 & 0 \end{matrix}$

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

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

$2x^2 - 5x + 3 \rightarrow x^2 - 5x + 4 \rightarrow (x-2)(x-3)$
 $\begin{matrix} x'=3 \Rightarrow x=\frac{3}{2} \\ x'=2 \Rightarrow x=2 \end{matrix}$

$3x^2 - 5x + 4 \rightarrow x^2 - 5x + 12 \rightarrow (x-4)(x-3)$
 $\begin{matrix} x'=3 \Rightarrow x=3 \\ x'=4 \Rightarrow x=\frac{4}{3} \end{matrix}$

$\begin{matrix} 2x^2 - 5x + 3 \geq 0 \rightarrow \begin{matrix} 3 & 2 \\ + & - & + \\ \hline & 0 & 0 \end{matrix} \\ 3x^2 - 5x + 4 \geq 0 \rightarrow \begin{matrix} 4 & 3 \\ + & - & + \\ \hline & 0 & 0 \end{matrix} \end{matrix}$
 $D_f = (-\infty, 1) \cup [\frac{4}{3}, \frac{3}{2}] \cup [2, +\infty)$

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

$\frac{2x^2 - 5x + 3}{3x^2 - 5x + 4} \geq 0 \rightarrow \begin{matrix} 3 & 2 & 4 & 3 \\ + & - & + & - \\ \hline & 0 & 0 & 0 \end{matrix}$

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

(تکلیف نمبر ۱)

(ماتریس کنونی)

(بزرگم دفتر B)

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

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

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

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

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

$$\Rightarrow \{(1, 2), (1, 3)\}$$

1

الف) $f(m) = \{(3, m^2), (2, 1), (-3, m), (-2, m), (3, m+2), (m, 4)\}$

$m^2 = 3 \rightarrow m^2 = m+2 \rightarrow m^2 - m - 2 = (m-2)(m+1) \rightarrow m=2 \rightarrow$ غلط $m=-1 \rightarrow$ غلط

$\rightarrow g(m) = \{(3, m^2), (2, 1), (m, 4), (3, m+2), (-2, m), (-1, 3)\}$

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

$g(m)$ به ازای هر m مقدار m عین خود

در زوج مرتب $(2, 1), (2, 4)$ و $(2, 1)$ و $(2, 4)$ و $(-1, 3)$ و $(-1, 4)$ و $(-1, 3)$

2

$$f(x) = \begin{cases} x^2 - 1 & ; x \leq 1 \\ ax + b & ; 1 < x < 2 \\ x^3 & ; x \geq 2 \end{cases}$$

$$x=1 \rightarrow 1-1 = a+b = 0$$

$$x=2 \rightarrow 8 = 2a+b$$

$$\begin{cases} -a + b = 0 \\ 2a + b = 8 \end{cases}$$

$$a = 8 \rightarrow b = -8$$

$$a \times b = ?$$

$$8 \times (-8) = -64$$

3

$$f(x) = \begin{cases} 2x - 3 & ; x \geq k \\ 4 - 3x & ; x < k \end{cases}$$

$$x=k \rightarrow 2k - 3 = 4 - 3k$$

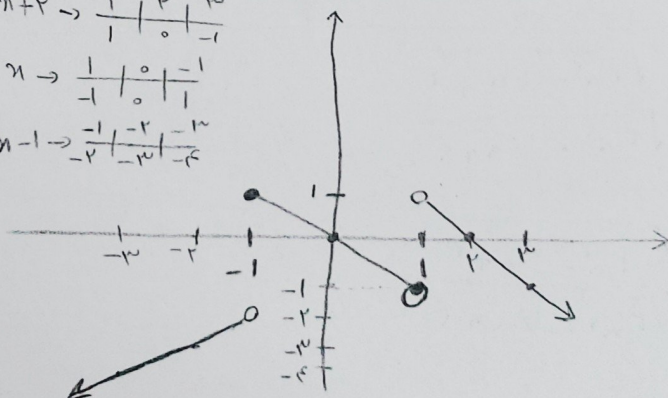
$$5k = 7$$

$$k = \frac{7}{5}$$

4

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

$$\begin{aligned} -x+2 &\rightarrow \frac{1}{1} \mid \frac{2}{0} \mid \frac{2}{-1} \\ -x &\rightarrow \frac{1}{-1} \mid \frac{0}{0} \mid \frac{-1}{1} \\ x-1 &\rightarrow \frac{-1}{-1} \mid \frac{-1}{-1} \mid \frac{-2}{-1} \end{aligned}$$



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

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