

گروه: دهم پارسه

سری: ۱۱, ۵

نام و نام خانوادگی: آنا ترک تری

الف) $y = x^2 - 5 \Rightarrow y + 5 = x^2 \Rightarrow x = \sqrt{y+5} \Rightarrow R_f = [-5, +\infty)$

$\hookrightarrow y+5 \geq 0 \Rightarrow y \geq -5$

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ب) $y = x^3 + 1 \Rightarrow y - 1 = x^3 \Rightarrow x = \sqrt[3]{y-1} \Rightarrow R_f = \mathbb{R}$

الف) $y = x^2 - 4x + 4 \Rightarrow y = (x-2)^2 + 2 \Rightarrow y - 2 = (x-2)^2 \Rightarrow x = \pm \sqrt{y-2} + 2 \Rightarrow R_f = [2, +\infty)$

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ب) $y = x^2 - 5x + 1 \quad \left(\frac{b}{a}\right)^2 = \left(\frac{-5}{1}\right)^2 = \frac{25}{1} \Rightarrow y = (x^2 - 5x + \frac{25}{4}) - \frac{25}{4} + 1 \Rightarrow$

$y = (x - \frac{5}{2})^2 - \frac{21}{4} \Rightarrow \pm \sqrt{y + \frac{21}{4}} + \frac{5}{2} = x \Rightarrow R_f = [-\frac{21}{4}, +\infty)$

الف) $y = \frac{x^2 + 3}{x^2 - 1} \Rightarrow yx^2 - 2y = x^2 + 3 \Rightarrow yx^2 - x^2 = 2y + 3 \Rightarrow x^2(y-1) = 2y+3 \Rightarrow$

$x^2 = \frac{2y+3}{y-1} \Rightarrow x = \pm \sqrt{\frac{2y+3}{y-1}} \Rightarrow y \neq 1, \quad \frac{2y+3}{y-1} \geq 0$

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

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ب) $y = \frac{2|x|+1}{|x|-1} \Rightarrow y|x| - 2y = 2|x|+1 \Rightarrow y|x| - 2|x| = 2y+1 \Rightarrow |x|(y-2) = 2y+1 \Rightarrow$
 $|x| = \frac{2y+1}{y-2} \Rightarrow y \neq 2, \quad \frac{2y+1}{y-2} \geq 0 \quad R_f = (-\infty, \frac{1}{2}] \cup (2, +\infty)$

$y = \frac{1}{x^2 - 4x + 4} \Rightarrow m = x^2 - 4x, \quad y = \frac{1}{m}$

و) $x = \frac{-4}{2(1)} = 2 \quad m_{\min} = (2)^2 - 4(2) = -4$

بر مخرج: $m \in [-4, 0) \cup (0, +\infty)$

$m \in (0, +\infty) \quad m \in [-4, 0) \Rightarrow y = \frac{1}{-4} \leftarrow m = -4$

$m \rightarrow 0 \Rightarrow y = \frac{1}{0} \Rightarrow$ تعریف نشده

$R_f = (-\infty, -\frac{1}{4}] \cup (0, +\infty)$

الف) $y = x^2 - 4x + 2 \quad \min \left| \frac{-b}{2a} = 2 \right|$

$R_f = [-2, +\infty)$

ب) $y = -x^2 + 4x + 2 \quad \max \left| \frac{-b}{2a} = 2 \right|$

$R_f = (-\infty, 6]$

الف) $y = \sqrt{x^2 - 4x + 2}$ $\min \left| \begin{array}{l} -\frac{b}{2a} = 2 \\ -\sqrt{\quad} \end{array} \right|$ $R_f = \sqrt{[-\sqrt{\quad}, +\infty)} \Rightarrow R_f = [0, +\infty)$

ب) $y = \sqrt{-x^2 + 4x + 10}$ $\max \left| \begin{array}{l} -\frac{b}{2a} = 2 \\ 14 \end{array} \right|$ $R_f = \sqrt{(-\infty, 14]} \Rightarrow R_f = [0, 14]$

الف) $y = x^5 + 3x^4 + 2x + 1$ $R_f = \mathbb{R}$

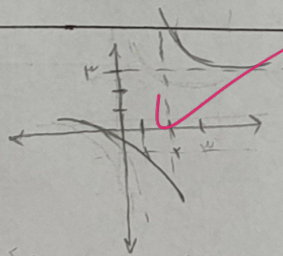
ب) $y = \sqrt{x^6 + 4x^3 + 4x + 1}$ $R_f = [0, +\infty)$

الف) $y = \frac{3x+1}{x-2}$ $R_f = \mathbb{R} - \{2\}$

ب) $y = \sqrt{\frac{3x+1}{x+2}}$ $R_f = \mathbb{R} - \{2\} \Rightarrow R_f = \mathbb{R} - \{2\}$

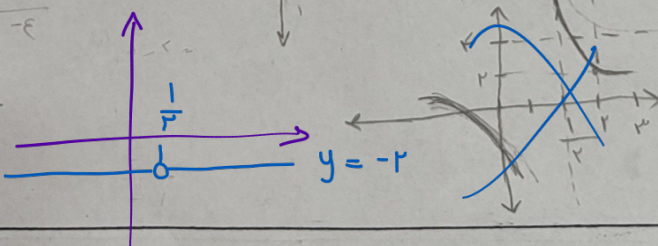
$\frac{f}{m} = \frac{3n+1}{n+2} \rightarrow R_f = \mathbb{R} - \{2\} \xrightarrow{\sqrt{\quad}} [0, +\infty) - \{2\}$

الف) $y = \frac{3x+1}{x-2}$ $x=2 \rightarrow \frac{a}{c} = 2$



$x=2 \rightarrow \frac{a}{c} = 2$

ب) $y = \frac{3x-2}{1-2x}$ $x = \frac{1}{2}$



$y = \frac{2(2x-1)}{1-2x} = -2$

الف) $\cos^2 x + \frac{1}{\cos^2 x} \Rightarrow \cos^2 x > 0 \checkmark \Rightarrow x + \frac{1}{x} \Rightarrow R_f = [2, +\infty)$

ب) $y = \sqrt{\frac{x^2+1}{x}} \Rightarrow y = \sqrt{\frac{x^2}{x} + \frac{1}{x}} \Rightarrow y = \sqrt{x + \frac{1}{x}} \Rightarrow x > 0 \text{ or } x < 0 \Rightarrow R_f = (-\infty, -1] \cup [1, +\infty)$