

۱۷/۵

نام و نام خانوادگی / /
 پاسخنامه تشریحی تکلیف شماره ۱... کلاس
 B

الف) $y = x^2 - 5 \Rightarrow x^2 = y + 5 \Rightarrow x = 0 \Rightarrow 0 = y + 5 \Rightarrow R_f = [-5, +\infty)$ ✓

ب) $y = x^2 + 1 \quad R_f = (-\infty, +\infty) = \mathbb{R}$ ✓ (۲)

الف) $y = x^2 - 4x + 4 \Rightarrow y = (x - 2)^2 \Rightarrow x - 2 = 0 \Rightarrow y = 0$
 $R_f = [0, +\infty)$ ✓ (۲)

ب) $y = x^2 - 4x + 1 \Rightarrow y = (x - 2)^2 - 3 \Rightarrow x - 2 = 0 \Rightarrow y = -3$
 $R_f = [-3, +\infty)$ ✓

(۱) الف) $y = \frac{x^2 + 3}{x^2 - 2} \quad x^2 \geq 0, x^2 \neq 2 \quad D_x = \mathbb{R} - \{\pm\sqrt{2}\}$
 $\Rightarrow y(x^2 - 2) = x^2 + 3 \Rightarrow x^2 = yx^2 - 2y + 3 \Rightarrow x^2(1 - y) = -2y + 3$
 $\Rightarrow x^2 = \frac{-2y + 3}{1 - y} \Rightarrow R_f = (-\infty, 1) \cup (\frac{3}{2}, +\infty)$ ✓
 ب) $y = \frac{2|x| + 1}{|x| - 2} \quad x \neq \pm 2$
 $\Rightarrow y(|x| - 2) = 2|x| + 1 \Rightarrow |x|(y - 2) = 2y + 1 \Rightarrow |x| = \frac{2y + 1}{y - 2} \Rightarrow R_f = (-\infty, 1) \cup (\frac{3}{2}, +\infty)$ ✓

$y = \frac{1}{x^2 - 4x} \Rightarrow y(x^2 - 4x) = 1 \Rightarrow x^2 - 4xy - 1 = 0$
 $x \neq 0, 4$
 $R_f = (-\infty, -\frac{1}{4}] \cup (0, +\infty)$ ✓ (۲)

الف) $y = x^2 - 4x + 2 \quad \text{ext } \left| -\frac{b}{2a} = -\frac{-4}{2} = 2 \right|$
 $9 - 16 + 2 = -5$
 $R_f = [-5, +\infty)$ ✓
 ب) $y = -x^2 + 4x + 2 \quad \text{ext } \left| -\frac{b}{2a} = -\frac{4}{-2} = 2 \right|$
 $-4 + 16 + 2 = 14$
 $R_f = (-\infty, 14]$ ✓ (۲)

الف) $y = \sqrt{x^2 - 4x + 2} \Rightarrow x^2 - 4x + 2 \geq 0$ ext $\left| -\frac{-b}{2a} = 2 \sqrt{(-1, +\infty)} \right.$
 $R_f = [0, 9 + \infty)$ ✓

ب) $y = \sqrt{x^2 + 2x + 1} = -x^2 + 2x + 1$
 ext $\left| \frac{2}{12} \right.$ $R_f = [0, \sqrt{12}]$ ✓

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

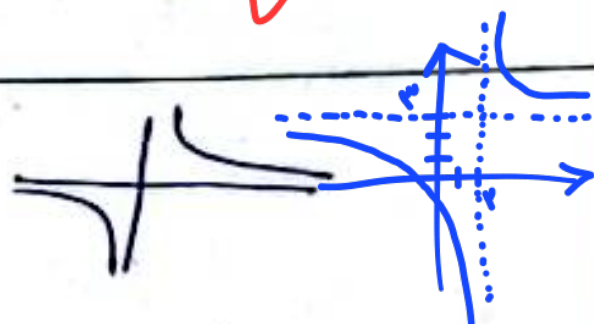
ب) $y = \sqrt{x^4 + 2x^2 + 4x + 1}$ $\sqrt{1R} \Rightarrow$ منفی نمی تواند باشد پس
 $R_f = [0, +\infty)$ ✓

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

ب) $y = \sqrt{\frac{4x+1}{x+3}}$ $\Rightarrow \sqrt{1R - \{4\}} \Rightarrow R_f = [0, 2) \cup (2, +\infty)$ ✓

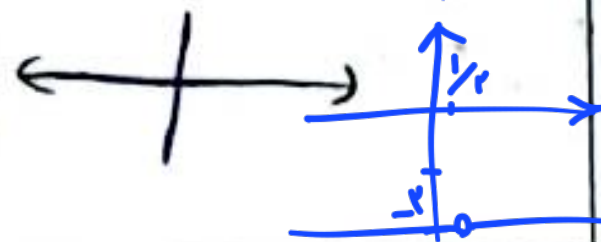
الف) $y = \frac{3x+1}{x-2}$
 ۲ = جانب قائم
 ۳ = جانب افقی

$R_f = \mathbb{R} - \{3\}$



ب) $y = \frac{4x-2}{1-2x} = \frac{4x-2}{-2x+1} \Rightarrow R_f = \mathbb{R} - \{-2\}$

$y = -2$ $2 \neq 1/2$



الف) $y = \cos^3 x + \frac{1}{\cos^3 x}$ $R_f = [2, +\infty)$ ✓

ب) $y = \sqrt[3]{\frac{x^2+1}{x}} = \sqrt[3]{x + \frac{1}{x}}$ $R_f = (-\infty, -2] \cup [2, +\infty)$

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