

نام و نام خانوادگی هجری شمسی تاریخ پاسخنامه تشریحی تکلیف شماره 9 کلاس 9A
 1398

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

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

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

ب) $y = x^2 - 5x + 1 \rightarrow y = x^2 - 5x + 1 + 5/4 - 5/4 \rightarrow (x - 5/2)^2 - 5/4 = y \rightarrow y + 5/4 = (x - 5/2)^2 \rightarrow x - 5/2 = \sqrt{y + 5/4} \rightarrow x = 5/2 + \sqrt{y + 5/4} \rightarrow R_f = [-5/4, +\infty)$

الف) $y = \frac{x^2 + 3}{x^2 - 2} \rightarrow yx^2 - 2y = x^2 + 3 \rightarrow yx^2 - x^2 = 2y + 3 \rightarrow x^2(y-1) = 2y+3 \rightarrow x^2 = \frac{2y+3}{y-1} \rightarrow x = \sqrt{\frac{2y+3}{y-1}}$
 $\frac{-1/2}{+0} \quad \frac{1}{-1/2} \quad R_f = (-\infty, -1/2] \cup (1, +\infty)$

ب) $y = \frac{2|x|+1}{|x|-4} \rightarrow y|x|-4y = 2|x|+1 \rightarrow |x|(-2+y) = 4y+1 \rightarrow |x| = \frac{4y+1}{-2+y}$
 $\frac{-1/4}{+0} \quad \frac{1}{-1/4} \rightarrow R_f = (-\infty, -1/4] \cup (2, +\infty)$

$y = \frac{1}{x^2 - 4x} \rightarrow yx^2 - 4xy = 1 \rightarrow yx^2 - 4xy - 1 = 0 \rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
 $x = \frac{-(-4y) \pm \sqrt{(-4y)^2 - 4y(-1)}}{2y} \Rightarrow \Delta \geq 0 \Rightarrow 16y^2 + 4y \geq 0 \Rightarrow 4y(4y+1) \geq 0$
 $\frac{-1/4}{+0} \quad \frac{0}{-1/4} \rightarrow R_f = (-\infty, -1/4] \cup [0, +\infty)$

الف) $y = x^2 - 4x + 2 \rightarrow x = \frac{-b}{2a} \Rightarrow -\frac{-4}{2} = 2 \Rightarrow y = 2^2 - 4 \times 2 + 2 = -6$
 $\hookrightarrow a > 0 \text{ (min)} \rightarrow R_f = [-6, +\infty)$

ب) $y = -x^2 + 4x + 2 \rightarrow x = \frac{-b}{2a} \rightarrow -\frac{4}{-2} = 2 \Rightarrow y = -(2)^2 + 4 \times 2 + 2 = 6$
 $\hookrightarrow a < 0 \text{ (max)} \rightarrow R_f = (-\infty, 6]$

الف) $y = \sqrt{x^2 - 6x + 2} \rightarrow a > 0 \quad x = -\frac{b}{2a} \rightarrow -\frac{-6}{2} = 3 \quad y = 3^2 - 6 \cdot 3 + 2 = -7$
 $\sqrt{[-7, +\infty)} \rightarrow R_f = [0, +\infty)$

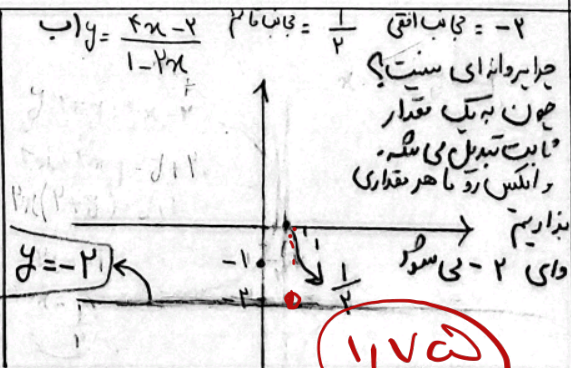
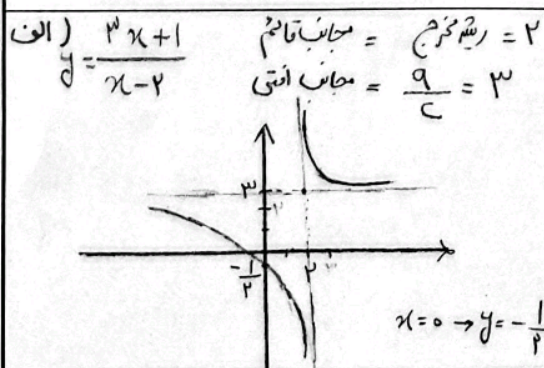
ب) $y = \sqrt{-x^2 + 4x + 10} \rightarrow a < 0 \quad (\max) \rightarrow x = -\frac{b}{2a} \rightarrow \frac{-4}{-2} = 2$
 $y = -\frac{(2)^2}{-2} + \frac{4 \times 2}{1} + 10 = 14 \rightarrow \sqrt{(-\infty, 14]} \rightarrow R_f = [0, 14]$ ۱۱/۵۵

الف) $y = x^5 + 3x^4 + 2x + 1 \quad R_f = \mathbb{R}$ چون بزرگترین توان مافرد است پس است
 $R_f = \mathbb{R}$ ۲

ب) $y = \sqrt{x^6 + 2x^3 + 1} \rightarrow \sqrt{\mathbb{R}} \rightarrow R_f = [0, +\infty)$
 چون در زیر رادیکال نمی توانه منفی باشه پس $R_f = [0, +\infty)$ ۲

الف) $y = \frac{3x+1}{x-2} \quad 3x-2 \neq 1 \times 1 \rightarrow R_f = \mathbb{R} - \{\frac{3}{1}\}$ ۲
 $\rightarrow R_f = \mathbb{R} - \{3\}$

ب) $y = \sqrt{\frac{4x+1}{x+3}} \quad 3 \times 4 \neq 1 \times 1 \checkmark \quad \sqrt{\mathbb{R} - \{\frac{4}{1}\}} \rightarrow R_f = [0, +\infty) - \{4\}$



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

ب) $y = \sqrt[3]{\frac{x^2+1}{x}} \rightarrow y = \sqrt[3]{x + \frac{1}{x}} \quad R_f = (-\infty, -2] \cup [2, +\infty)$
 $x > 0 \rightarrow (\sqrt[3]{2}, +\infty)$
 $x < 0 \rightarrow (-\infty, \sqrt[3]{-2})$ ۱/۵۵