

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

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

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

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

الف) $x^2 + 3 = 4x^2 - 2y \rightarrow x^2 - 4x^2 = -2y - 3 \rightarrow x^2(1-4) = -2y-3 \rightarrow x^2 = \frac{-2y-3}{1-4} \rightarrow x = \pm \sqrt{\frac{-2y-3}{1-4}}$
 $-2y = 3 \rightarrow y = -\frac{3}{2} \quad 1-4=0 \rightarrow 1=y$
 $R_f = (1, \infty) \cup (-\infty, -\frac{3}{2}]$

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

$\frac{1}{x^2 - Ky} = 4 \rightarrow 4(x^2 - Ky) = 1 \rightarrow 4x^2 - 4Ky - 1 = 0 \rightarrow \Delta = (-4Ky)^2 - 4(4)(-1) = 16Ky^2 + 16 \rightarrow 0 < \Delta$
 $0 < 4Ky(1+Ky) \rightarrow 0 < Ky \quad \text{یا} \quad -\frac{1}{K} > 4 \quad R_f = (0, \infty) \cup (-\infty, -\frac{1}{K}]$

الف) $\alpha > 0 \rightarrow \begin{cases} x = -\frac{b}{2a} = \frac{4}{2} = 2 \\ y = 9 - 11 + 2 = -1 \end{cases} \quad R_f = [-1, +\infty)$

ب) $\alpha < 0 \rightarrow \begin{cases} -\frac{b}{2a} = x = \frac{-K}{-2} = \frac{K}{2} \\ y = -K + 11 + 2 = 4 \end{cases} \quad R_f = (-\infty, 4]$

الف) $\alpha > 0 \rightarrow \begin{cases} -\frac{b}{2a} = x = \frac{4}{2} = 2 \\ y = -1 \end{cases} \quad R_f = \sqrt{[-1, +\infty)} \Rightarrow R_f = [0, +\infty)$

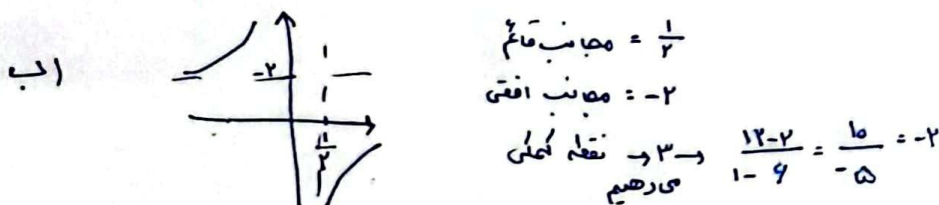
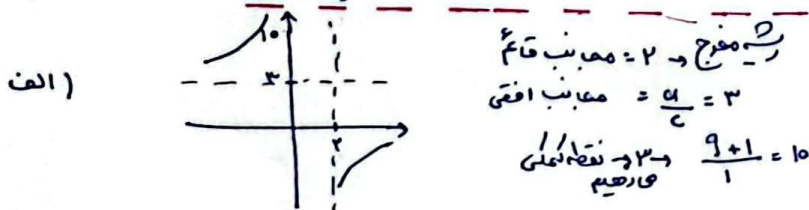
ب) $\alpha < 0 \rightarrow \begin{cases} -\frac{b}{2a} = x = \frac{-K}{-2} = \frac{K}{2} \\ y = -K + 11 + 10 = 11 - K \end{cases} \quad R_f = \sqrt{(-\infty, 14]} \Rightarrow R_f = [0, 14]$

الف) $R_f = \mathbb{R}$ x^2 برشته ی توان است و فرد است

ب) $R_f = [0, +\infty)$ عبارت زیر رادیکال است پس دامنه باید به قدری صفر باشد.

الف) $R_f = \mathbb{R} - \{3\}$

ب) $R_f = [0, +\infty) - \{2\}$



الف) $R_f = [2, +\infty)$ ← توان ۲ دارد پس فقط مثبت‌ها در دامنه است

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