

تالیف شماره ۹

گروه دهم بنیادین (فصل ۲)

تاریخ

الف $y = x^2 - 5 \rightarrow x = \sqrt{y+5} \quad y+5 \geq 0 \quad y \geq -5$ -۱
 $R_f = [-5, +\infty)$

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

الف $y = x^2 - 4x + 6 \rightarrow (x-2)^2 + 2 = y \rightarrow x = 2 \pm \sqrt{y-2+2}$ -۲
 $y-2 \geq 0 \rightarrow y \geq 2 \rightarrow R_f = [2, +\infty)$

ب $y = x^2 - 5x + 1 \rightarrow y = (x-\frac{5}{2})^2 - \frac{21}{4} \rightarrow (x-\frac{5}{2})^2 = y + \frac{21}{4}$
 $x = \frac{5}{2} \pm \sqrt{y + \frac{21}{4}} \rightarrow y + \frac{21}{4} \geq 0 \rightarrow y \geq -\frac{21}{4} \quad R_f = [-\frac{21}{4}, +\infty)$

الف $x^2 + 3 = y \rightarrow yx^2 - 2y = x^2 + 3 \rightarrow yx^2 - x^2 = 2y + 3$ -۳
 $x^2(y-1) = 2y+3 \rightarrow x^2 = \frac{2y+3}{y-1} \rightarrow x = \pm \sqrt{\frac{2y+3}{y-1}}$
 $R_f = (-\infty, \frac{3}{2}] \cup (1, +\infty)$

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

الف $y = \frac{1}{x^2-4x} \rightarrow yx^2 - 4xy - 1 = 0 \rightarrow x = \frac{4y \pm \sqrt{(-4y)^2 - 4(-y)}}{2y}$ -۴
 $14y^2 + 4y \geq 0 \rightarrow 4y(4y+1) \geq 0$
 $R_f = (-\infty, -\frac{1}{4}] \cup [0, +\infty)$

زیاده

الف $x^2 - 6x + 2 = y$ $x_{\min} \rightarrow -\frac{b}{2a} = 3 \rightarrow -V \Rightarrow R_f = [-V, +\infty)$ -5

ب $x^2 + 4x + 2 = y$ $x_{\max} \rightarrow -\frac{b}{2a} = 2 \rightarrow 9 \Rightarrow R_f = (-\infty, 9]$

الف $\sqrt{x^2 - 6x + 2}$ $x_{\min} \rightarrow -\frac{b}{2a} = 3 \rightarrow -V \Rightarrow R_f = \sqrt{[-V, +\infty)}$ -6

ب $\sqrt{-x^2 + 4x + 10}$ $x_{\max} \rightarrow -\frac{b}{2a} = 2 \rightarrow 14 \Rightarrow R_f = \sqrt{(-\infty, 14]}$
 $R_f = [0, \sqrt{14}]$

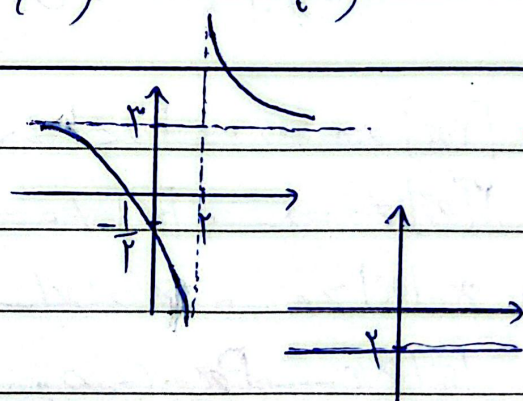
الف $x^5 + 3x^4 + 2x + 1$ بزرگترین توان فرد است $\rightarrow \mathbb{R}$ -7

ب $\sqrt{x^5 + 3x^4 + 2x + 1}$ بزرگترین توان فرد است $\rightarrow \sqrt{\mathbb{R}} = [0, +\infty)$

الف $y = \frac{3x+1}{x-2}$ $\rightarrow \mathbb{R} - \{\frac{a}{c}\} \rightarrow \mathbb{R} - \{2\}$ -8

ب $y = \sqrt{\frac{3x+1}{x+2}}$ $\rightarrow \mathbb{R} - \{\frac{a}{c}\} \rightarrow \mathbb{R} - \{2\} \rightarrow \sqrt{\mathbb{R} - \{2\}} = [0, +\infty) - \{2\}$

الف $y = \frac{3x+1}{x-2}$ $y = \frac{a}{c} = 2$ $\rightarrow$ $y = 2$ $\rightarrow$ $x = 0 \rightarrow y = -\frac{1}{2}$



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

الف $y = \cos^2 x + \frac{1}{\cos^2 x}$ $\rightarrow \cos^2 x \geq 0 \rightarrow R_f = [2, +\infty)$ -9

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

بزرگترین توان فرد است $\rightarrow R_f = (-\infty, \sqrt{-2}] \cup [\sqrt{2}, +\infty)$