

۱۹,۵

نام و نام خانوادگی علی جمالی پاسخنامه تشریحی تکلیف شماره ۴ ... کلاس ... یازدهم ... A.....

الف) $y = (x-1)^3 + 1 \Rightarrow \sqrt[3]{y-1} = x-1 \Rightarrow x = \sqrt[3]{y-1} + 1$ بر چند جمله‌ای درجه سوم برابر ۱۸ است.
 $R_f = \mathbb{R}$ ✓

ب) $x^2 - 2x = \frac{1}{y} \Rightarrow x^2 - 2x + 1 = \frac{1}{y} + 1 \Rightarrow (x-1)^2 = \frac{1}{y} + 1 \Rightarrow x-1 = \sqrt{\frac{1}{y} + 1}$
 $\Rightarrow y \neq 0$
 $\Rightarrow \frac{1}{y} + 1 \geq 0 \Rightarrow \frac{y+1}{y} \geq 0 \Rightarrow y \in (-\infty, -1] \cup (0, +\infty)$
 $\text{IN IT} \Rightarrow R_f \in (-\infty, -1] \cup (0, +\infty)$ ✓

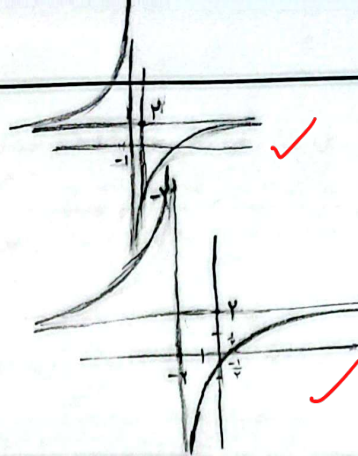
الف) $y_v = \frac{-\Delta}{2a} = \frac{-(14-40)}{2} = \frac{26}{2} = 13 \Rightarrow R_f = [13, +\infty)$ ✓
 $a > 0 \Rightarrow y_v = \min(f)$
 ب) $y_v = \frac{-\Delta}{2a} = \frac{-(34+12)}{-2} = \frac{46}{2} = 23 \Rightarrow R_f = (-\infty, 23]$ ✓
 $a < 0 \Rightarrow y_v = \max(f)$
 ج) $\min g = \frac{-\Delta}{2a} = \frac{-(14+12)}{2} = \frac{-26}{2} = -13 \Rightarrow R_g = [-13, +\infty) \Rightarrow R_f = [0, +\infty)$ ✓
 $a > 0 \Rightarrow y_v = \min(g)$
 د) $\max g = \frac{-\Delta}{2a} = \frac{-(34-0)}{-2} = 9 \Rightarrow R_g = (-\infty, 9] \Rightarrow R_f = [0, 9]$ ✓

الف) $\mathbb{R}$ ✓
 ب) $\mathbb{R}$ ✓
 ج) $R_g = \mathbb{R} \Rightarrow R_{fg} = [0, +\infty)$ ✓
 د) $R_g = \mathbb{R} \Rightarrow R_{fg} = [0, +\infty)$ ✓

الف) $\mathbb{R} - \{2\}$ ✓ $\frac{a}{c} = \frac{3}{1} = 3$
 ب) $\mathbb{R} - \{2\}$ ✓ $\frac{a}{c} = \frac{2}{1} = 2$

الف) $R_g = \mathbb{R} - \{2\} \Rightarrow R_f = [0, +\infty) - \{2\}$ ✓
 $\frac{a}{c} = \frac{2}{1} = 2$
 ب) $R_g = \mathbb{R} - \{2\} \Rightarrow R_f = [0, +\infty)$ ✓
 $\frac{a}{c} = \frac{3}{1} = 3$

الف) $\text{مجاذب افقی} = \frac{a}{c} = 2$
 $\text{مجاذب قائم} = \text{رشته عمود} = -1$
 $f(0) = -3$



ب) $\text{مجاذب افقی} = \frac{a}{c} = 2$
 $\text{مجاذب قائم} = \text{رشته عمود} = -2$
 $x+2=0 \Rightarrow x=-2$
 $f(0) = \frac{-1}{2}$

الف) $-1 \leq \sin x \leq 1 \Rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$ ✓

ب) $\frac{x^2+1}{x^3} = x^2 + \frac{1}{x^3} \Rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$ ✓
 $g(x) = x^2 \Rightarrow R_g = \mathbb{R}$

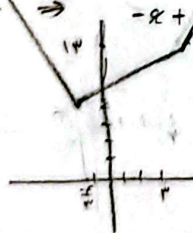
ج) $\frac{\sqrt[3]{x^2+1}}{\sqrt{x}} = \sqrt[3]{x} + \frac{1}{\sqrt[3]{x}} \Rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$ ✓
 $g(x) = \sqrt[3]{x} \Rightarrow R_g = \mathbb{R}$

د) $g(x) = \sqrt{x} \Rightarrow R_g = [0, +\infty) \Rightarrow R_f = [2, +\infty)$ ✓

الف) $x^2 + 3 + \frac{1}{x^2+3} - 3 \geq 3 + \frac{1}{3} - 3 = \frac{1}{3} \Rightarrow R_f = [\frac{1}{3}, +\infty)$ ✓
 $x^2 + 3 > 1 \Rightarrow \frac{1}{x^2+3} > 0$ min وقتی است که x^2+3 مقدار کمترین مقدار باشد.

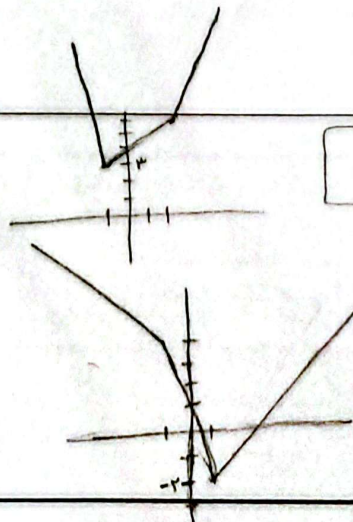
ب) $\sqrt{x^2+4} + \frac{1}{\sqrt{x^2+4}} \geq \sqrt{4} + \frac{1}{\sqrt{4}} = 2.5 \Rightarrow R_f = [2.5, +\infty)$ ✓

$x \geq 3 \Rightarrow x-3 + 3x+5 = 4x+2 \Rightarrow f(3)=13$
 $3 \geq x \geq \frac{-f}{4} \Rightarrow -x+3 + 3x+5 = 2x+8 \Rightarrow f(\frac{-f}{4}) = \frac{13}{2}$
 $x \leq \frac{-f}{4} \Rightarrow -x+3 - 3x-5 = -4x-2 \Rightarrow f(\frac{-f}{4}) = \frac{13}{2}$



الف) $\frac{-1}{-2x} \leq \frac{1}{x+1} \leq \frac{1}{3x}$

ب) $\frac{1}{-2x} \leq \frac{1}{x+1} \Rightarrow \frac{1}{-2x} - \frac{1}{x+1} \leq 0 \Rightarrow \frac{x+1+2x}{-2x(x+1)} \leq 0 \Rightarrow \frac{3x+1}{-2x(x+1)} \leq 0$
 $\frac{1}{x+1} \leq \frac{1}{3x} \Rightarrow \frac{1}{x+1} - \frac{1}{3x} \leq 0 \Rightarrow \frac{3x - (x+1)}{3x(x+1)} \leq 0 \Rightarrow \frac{2x-1}{3x(x+1)} \leq 0$



$R_f = [2.5, +\infty)$ ✓

$R_f = [-2.5, +\infty)$ ✓