

نام و نام خانوادگی آبریز، ایسا علیا، زین پاسخنانه تشریحی تکلیف شماره کلاس دوازدهم ریاضی

$$D_f = [-2, 4] \Rightarrow \text{~~3x+2~~} -2 \leq f(x) \leq 4$$

$$\Rightarrow -2 \leq \frac{3x+2}{5} \leq 4 \rightarrow -10 \leq 3x+2 \leq 20 \rightarrow -12 \leq 3x \leq 18$$

$$\Rightarrow D_{f(\frac{3x+2}{5})} = [-4, 6] \checkmark$$

(۲)

۱

$$-2 \leq f(x) \leq 3 \rightarrow -6 \leq 3x \leq 7 \rightarrow -8 \leq 3x-2 \leq 7$$

$$\Rightarrow D_{f(x)} = [-8, 7] \checkmark$$

(۲)

۲

$$f\left(\frac{3x+1}{2}\right) \begin{cases} x=1 \rightarrow \frac{3(-1)+1}{2} = -1 \\ x=3 \rightarrow \frac{3(3)+1}{2} = 5 \end{cases} \Rightarrow D_{f(x)} = [-1, 5]$$

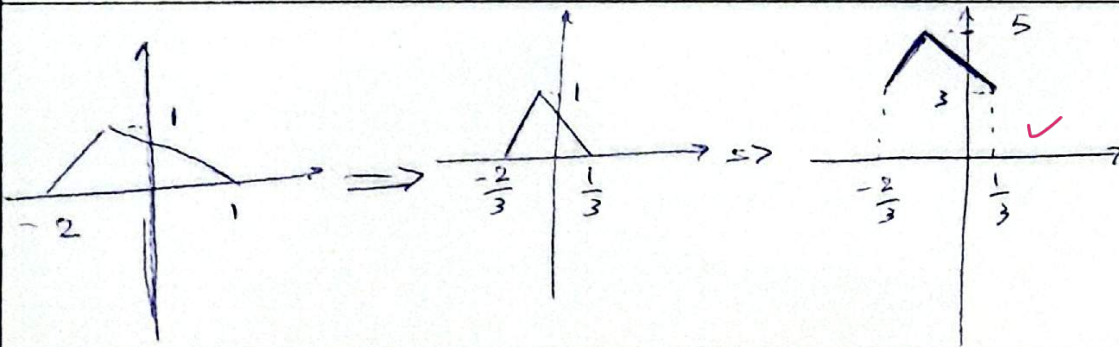
(۲)

۳

$$-1 \leq 2-5x \leq 5 \rightarrow -3 \leq -5x \leq 3 \rightarrow -\frac{3}{5} \leq x \leq \frac{3}{5} \Rightarrow D_g = \left[-\frac{3}{5}, \frac{3}{5}\right] \checkmark$$

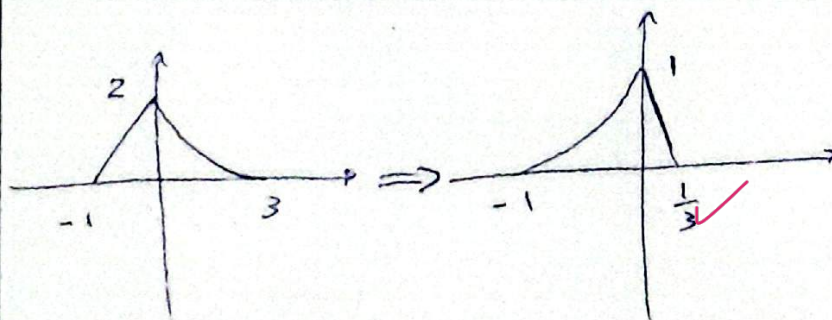
(۲)

۴



(۲)

۵



$$S(4, 3) \rightarrow y = a(x-h) + k \quad \begin{matrix} a = -\frac{1}{3} \\ h = 4, k = 3 \end{matrix} \rightarrow y = -\frac{1}{3}(x-4)^2 + 3$$

$$\text{در } y: -\frac{1}{3}(x-4)^2 + 3 = 0 \rightarrow x-4 = \pm 3 \rightarrow \begin{matrix} x = 1 \\ x = 7 \end{matrix}$$

(2)

6

$$\text{مثال} \Rightarrow a(x-1)^2 + 4 \rightarrow (\pm 2)^2 a = -4 \Rightarrow a = -1$$

$$f(x) = -(x-1)^2 + 4$$

$$f(1) \rightarrow 3x + 2 = 1 \rightarrow x = -\frac{1}{3} \quad \left\{ \begin{matrix} S_y: 1 - 2f(1) = 1 - 2(4) = -7 \end{matrix} \right.$$

$$\Rightarrow S \left| \begin{matrix} -\frac{1}{3} \\ -7 \end{matrix} \right| \Rightarrow \alpha\beta = \left(-\frac{1}{3}\right)(-7) = \frac{7}{3}$$

(2)

7

$$a \leq x-1 \leq 4, -1 \leq x+1 \leq b \rightarrow a+1 \leq x \leq 5, -2 \leq x \leq b-1$$

$$\Rightarrow D_{g \cap f} = (-2, 5) \Rightarrow \begin{matrix} a+1 = -2 \Rightarrow a = -3 \\ b-1 = 5 \Rightarrow b = 6 \end{matrix}$$

$$a-b = -3 - (6) = -9$$

(2)

8

$$R_g \subseteq R_f \neq [-1, 2], \quad D_f = \left[-\frac{1}{2}, \frac{7}{2}\right]$$

$$D_{g_2} \subseteq D_f = \left[-\frac{1}{2}, \frac{7}{2}\right]$$

$$f(x) \sim [-1, 2]$$

$$2f(x) - 3 \sim [-5, 1]$$

$$|2f(x) - 3| \sim [0, 1]$$

$$|2f(x) - 3| \sim [0, 1]$$

$$R_{g_2} = [0, 1]$$

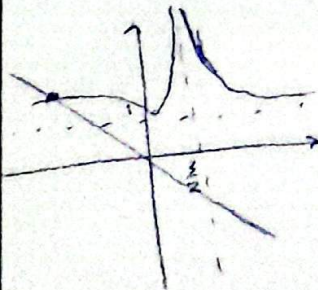
صفت آخر

$$\left(-\infty, \frac{1-\sqrt{7}}{2} \right)$$

(1, 5)

9

$$f(x) \rightarrow f(x-2) + 1 \rightarrow \left| \frac{(x-2)+1}{2(x-2)+1} \right| + 1 = \left| \frac{x-1}{2x-3} \right| + 1$$



$$\frac{x-1}{2x-3} \leq x+1 \rightarrow 2x^2 - 2x - 3 \geq 0$$

$$\Rightarrow \Delta: \frac{2 \pm \sqrt{28}}{4} = \frac{2 \pm 2\sqrt{7}}{4} = \frac{1 \pm \sqrt{7}}{2}$$

صفت آخر

(5, 5)

10

$$D_{y_1} = [-3, 5] \rightarrow -3 \leq x \leq 5 \rightarrow -\frac{1}{3} \leq \frac{x}{3} + 1 \leq \frac{5}{3} \Rightarrow D_f = \left[-\frac{1}{3}, \frac{5}{3}\right]$$

9.

$$R_{y_1} = [-1, 2] \rightarrow -1 \leq f \leq 2 \rightarrow -5 \leq 2f - 3 \leq 1 \rightarrow 0 \leq |2f - 3| \leq 5$$

$$0 \leq \sqrt{|2f - 3|} \leq \sqrt{5} \Rightarrow R_f = [0, \sqrt{5}]$$

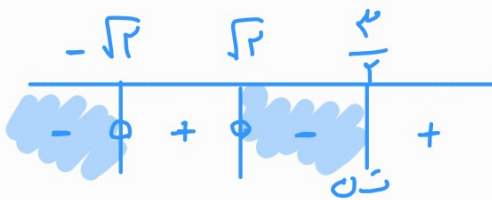
$$g(x) = \left| \frac{(x-2)+1}{2(x-2)+1} \right| + 1 = \left| \frac{x-1}{2x-3} \right| + 1$$

10.

$$x + g(x) < 0 \rightarrow \left| \frac{x-1}{2x-3} \right| < -1-x$$

از به قدر مطلق بزرگتر شده پس باید مثبت باشد: $-1-x > 0 \rightarrow x < -1$

$$\xrightarrow{x < -1} \frac{x-1}{2x-3} < -1-x \rightarrow \frac{2x^2-4}{2x-3} < 0 \rightarrow \frac{2(x-\sqrt{2})(x+\sqrt{2})}{2x-3} < 0$$



$$\xrightarrow{x < -1} x < -\sqrt{2} \rightarrow (-\infty, -\sqrt{2})$$