

روز سه

تالیف سری هفت

باران شریف

$$f(x) \rightarrow D_{f(x)} = [-2, 4] \rightarrow f\left(\frac{3x+2}{5}\right)$$

سوال ۱:

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

$$-4 \leq x \leq 6 \quad \text{---} \quad -12 \leq 3x \leq 18 \quad \text{---} \quad D = [-4, 6]$$

$$x = -2 \rightarrow$$

$$f(3x-2) \quad D = [-2, 3] \rightarrow 3x-2 = 3x-2-2 = -4$$

سوال ۲:

$$x = 3 \rightarrow 3 \times 3 - 2 = 7 \quad D = [-1, 7]$$

$$f\left(\frac{3x+1}{2}\right) \rightarrow D = [-1, 2] \quad f(2-3x)?$$

سوال ۳:

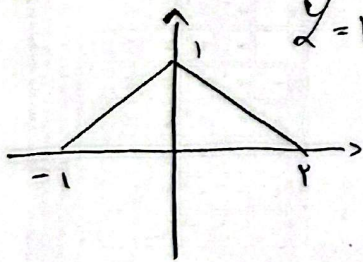
$$x = -1 \rightarrow \frac{3x-1+1}{2} = -1 \quad D = [-1, 2]$$

$$x = 3 \rightarrow \frac{3 \times 3 + 1}{2} = 5$$

$$-3 \leq -3x \leq 3$$

$$\frac{3}{5} \geq x \geq -\frac{3}{5} \quad D_f = \left(-\frac{3}{5}, \frac{3}{5}\right]$$

$$y = 2x$$



$$y = 2f(3x+1) + 3$$

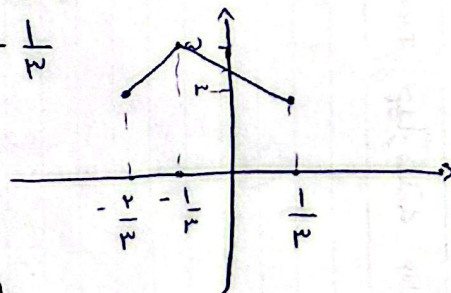
$$-1 \leq 3x+1 \leq 2$$

$$-2 \leq 3x \leq 1$$

$$-\frac{2}{3} \leq x \leq \frac{1}{3}$$

$$3x+1 = 0$$

$$x = -\frac{1}{3}$$



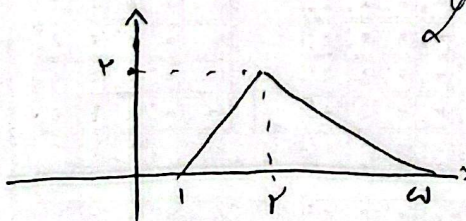
سوال ۴:

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

$$1 \leq 2-3x \leq 5$$

$$-1 \leq -3x \leq 4$$

$$\frac{1}{3} \geq x \geq -1$$

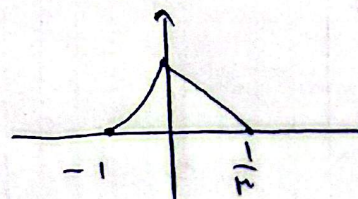


$$2-3x = 2$$

$$x = 0$$

$$y = \frac{1}{3} \times 1 = \frac{1}{3}$$

سوال ۵:



$$y = -\frac{1}{3}x^2 + \frac{2}{3}x + 1 \quad (r, r)$$

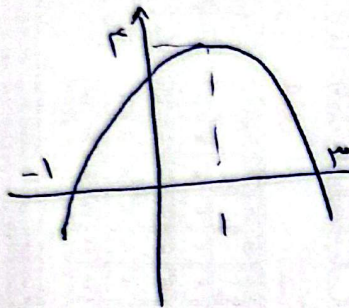
سوال ۲:

$$y = a(n-r)^2 + k$$

$$y = -\frac{1}{3}(n-r)^2 + 3$$

$$\frac{1}{3}(n-r)^2 = 3$$

$$(n-r)^2 = 9 \rightarrow n-r = \pm 3 \rightarrow \begin{matrix} n=4 \\ n=1 \end{matrix} \rightarrow \underline{v-1=4}$$



$$y = 1 - 2f(3x+2)$$

سوال ۷:

$$-1 \leq 3x+2 \leq 3$$

$$3x+2=1$$

$$x = -\frac{1}{3}$$

$$y = 1 - 2x^2$$

$$y = -v$$

$$2) (\alpha, \beta) \rightarrow \left. \begin{matrix} \alpha = -\frac{1}{3} \\ \beta = -v \end{matrix} \right\} \frac{v}{3} = \alpha, \beta$$

$$D_f = (a, r] \quad D_g = [-1, b)$$

$$y = f(x-1) + g(x+1)$$

سوال ۱:

$$2) D = (-1, \omega)$$

$$a-b = ?$$

$$a \leq n-1 \leq r$$

$$-1 \leq n+1 \leq b$$

$$1+a \leq n \leq \omega$$

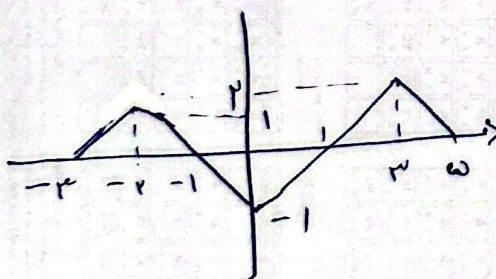
$$-1 \leq n < b-1$$

$$\underbrace{\quad \quad \quad}_U (-1, \omega)$$

$$\begin{matrix} b-1 = \omega \\ b = 4 \end{matrix}$$

$$\begin{matrix} 1+a = -1 \\ a = -2 \end{matrix}$$

$$-3-4 = -7$$



$$y = f\left(\frac{x}{2} + 1\right) \rightarrow \frac{x}{2} + 1 = 0$$

$$x = -2 \rightarrow y = -1$$

سوال ۹:

$$x = -3 \rightarrow -\frac{3}{2} + 1 = -\frac{1}{2}$$

$$x = \omega \rightarrow \frac{\omega}{2} + 1 = \frac{v}{2}$$

$$\left. \begin{matrix} x = -3 \rightarrow y = -1 \\ x = \omega \rightarrow y = \frac{v}{2} \end{matrix} \right\} D_{y_f} = \left[-\frac{1}{2}, \frac{v}{2}\right]$$

$$R \rightarrow -1 \leq f(x) \leq 2 \rightarrow -2 \leq 2f(x) \leq 4 \rightarrow -2 \leq 2f(x)-3 \leq 1$$

از قیمت y کو محاسبه

$$0 \leq |2f(x)-3| \leq \omega$$

$$R_f = [0, \sqrt{\omega}] \quad \leftarrow \quad 0 \leq \sqrt{|2f(x)-3|} \leq \sqrt{\omega}$$

$$f(x) = \left| \frac{x+1}{x+1} \right| \rightarrow g(x) = \left| \frac{(x-2)+1}{x(x-2)+1} \right| + 1 \quad \text{سوال 10}$$

$$x + \left| \frac{x-1}{x-3} \right| + 1 < 0$$

$$x = \frac{3}{2}$$

$$x = \pm \sqrt{2}$$

$$\frac{x^2 - 3}{x-3} = \frac{x^2 - 3x + x - 1 + x - 3}{x-3}$$

$$x = \frac{3}{2}$$

$$-\sqrt{2} \quad 0 \quad +\sqrt{2} \quad \frac{3}{2}$$

$$x \rightarrow [-\sqrt{2}, \sqrt{2}] \cup \left(\frac{3}{2}, +\infty \right)$$

$$\left[-\sqrt{2}, \frac{1-\sqrt{2}}{2} \right] \cup \left(\frac{3}{2}, \frac{1+\sqrt{2}}{2} \right]$$

$$\frac{x^2 - 3x - x + 1 + x - 3}{x-3} = \frac{x^2 - 3x - 2}{x-3} < 0$$

$$\frac{1-\sqrt{2}}{2} \quad \frac{3}{2} \quad \frac{1+\sqrt{2}}{2}$$

$$\left(-\infty, \frac{1-\sqrt{2}}{2} \right] \cup \left(\frac{3}{2}, \frac{1+\sqrt{2}}{2} \right]$$