

روز سه

تالیف سری هفته

باران شریف

۱۸،۵

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

سوال ۱:
(۲)

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

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

$$f(3x-2) \quad D = [-2, 3] \rightarrow 3x-2 = 3x-2-2 = -1$$

سوال ۲:
(۲)

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

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

سوال ۳:
(۲)

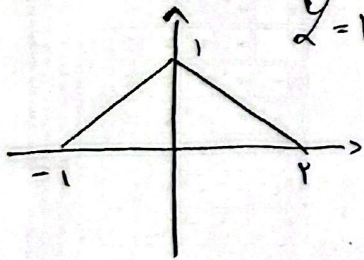
$$x=-1 \rightarrow \frac{3x-1+1}{2} = -1 \quad D = [-1, \omega]$$

$$x=3 \rightarrow \frac{3 \times 3 + 1}{2} = \omega \quad -3 \leq -\omega x \leq 3$$

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

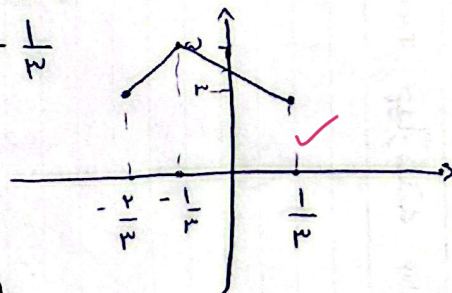
$$y-2=2x$$

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



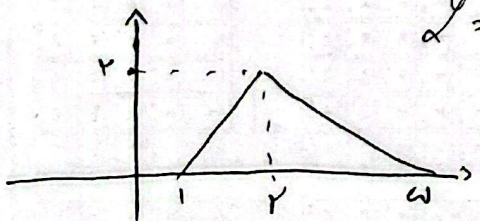
$$\begin{aligned} -1 \leq 3x+1 \leq 2 \\ -2 \leq 3x \leq 1 \\ -\frac{2}{3} \leq x \leq \frac{1}{3} \end{aligned}$$

$$\begin{aligned} 3x+1 &= 0 \\ x &= -\frac{1}{3} \end{aligned}$$



سوال ۴:
(۲)

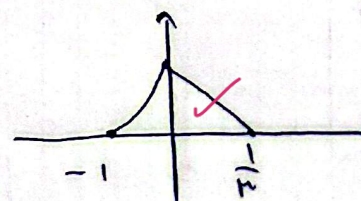
$$y = \frac{1}{p} f(2-3x)$$



$$\begin{aligned} 1 \leq 2-3x \leq \omega \\ -1 \leq -3x \leq 3 \\ \frac{1}{3} \geq x \geq -1 \end{aligned}$$

$$\begin{aligned} 2-3x &= 2 \\ x &= 0 \\ y &= \frac{1}{x} \times 2 = 1 \end{aligned}$$

سوال ۵:
(۲)



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

سوال ۲:
(۲)

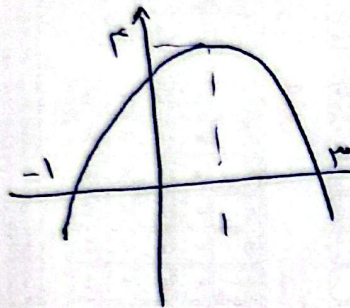
$$y = a(n-r)^r + k$$

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

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

$$(n-r)^r = 9 \rightarrow n-r = \pm 3 \rightarrow \frac{n}{n=1} \rightarrow \sqrt{1-9}$$

محل برخورد با محور x ها



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

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

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

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

$$3x+2=1$$

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

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

$$y = -1$$

$$2) (\alpha, \beta) \rightarrow \alpha = -\frac{1}{3}, \beta = -1 \rightarrow \frac{1}{3} \checkmark = \alpha, \beta$$

سوال ۷:
(۲)

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

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

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

$$1+a \leq n \leq r$$

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

$$(-1, \omega)$$

$$b-1 = \omega$$

$$1+a = -1$$

$$a = -2$$

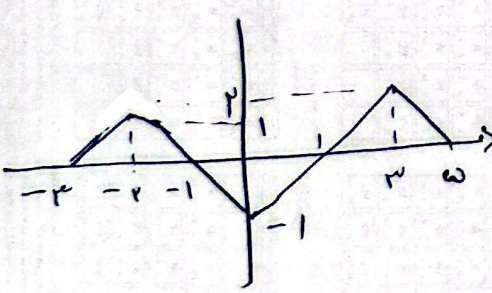
$$-3-4 = -7$$

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

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

$$a-b = ?$$

سوال ۱:
(۲)



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

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

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

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

$$D_{y_f} = \left[-\frac{1}{2}, \frac{1}{2}\right]$$

سوال ۹:
(۲)

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

از قیمت y ها

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

$$R_f = [0, \sqrt{\omega}]$$

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

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

$$x = \frac{1}{2}$$

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

✓ $\int_{-\sqrt{r}}^{\sqrt{r}} \sqrt{r-x^2} \, dx$

$$\begin{array}{r} - \quad 0 \quad + \quad 0 \quad - \quad 1 \quad + \\ \hline \end{array}$$

$$X \rightarrow [-\sqrt{r}, \sqrt{r}] \cup (\frac{r}{r}, +\infty)$$

$$[-\sqrt{\mu}, \frac{1-\sqrt{a}}{\mu}] \cup (\frac{\mu}{\mu}, \frac{1+\sqrt{a}}{\mu}]$$

$$\frac{1 \pm \sqrt{c}}{r}$$

$$\frac{1-\sqrt{a}}{r} \quad \frac{r}{r} \quad \frac{1+\sqrt{a}}{r}$$

- 0 + - +

↙ ↘

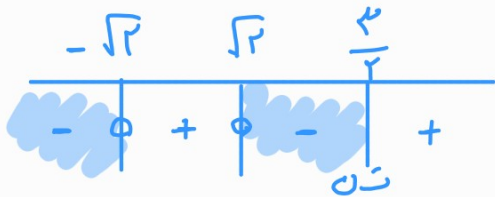
$$(-\infty, \frac{1-\sqrt{a}}{r}] \cup (\frac{r}{r}, \frac{1+\sqrt{a}}{r})$$

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

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

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

$\frac{n < -1}{\text{قدر مطلق مثبت}} \rightarrow \frac{n-1}{2n-3} < -1-n \rightarrow \frac{2n^2-4}{2n-3} < 0 \rightarrow \frac{2(n-\sqrt{2})(n+\sqrt{2})}{2n-3} < 0$



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