

۱۴, ۵

الف: شماره ۱۰

الاس: دراز دهم

نام و نام خانوادگی: مرزبان

$$D_f = [-2, 4]$$

$$f\left(\frac{3x+2}{5}\right)$$

$$D = [-4, 4] \quad (2)$$

$$-2 \leq \frac{3x+2}{5} \leq 4 \rightarrow -10 \leq 3x+2 \leq 20 \rightarrow -12 \leq 3x \leq 18 \rightarrow -4 \leq x \leq 6$$

$$f(2m-5)$$

$$D = [-2, 2]$$

$$(2) (2)$$

$$-2 \leq m \leq 2 \rightarrow -4 \leq 2m \leq 4 \rightarrow -8 \leq 2m-5 \leq -1 \rightarrow D_{f(m)} = [-8, -1]$$

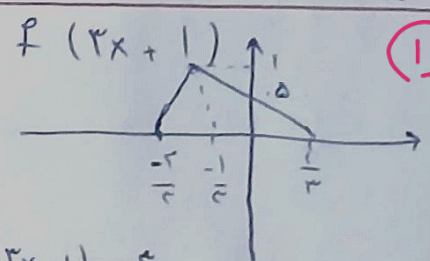
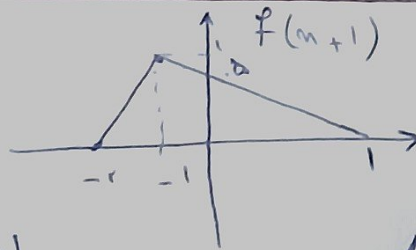
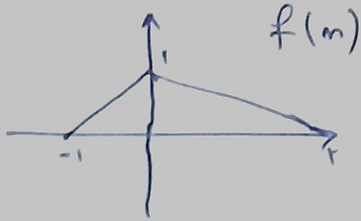
$$f\left(\frac{3x+1}{2}\right)$$

$$D = [-1, 2]$$

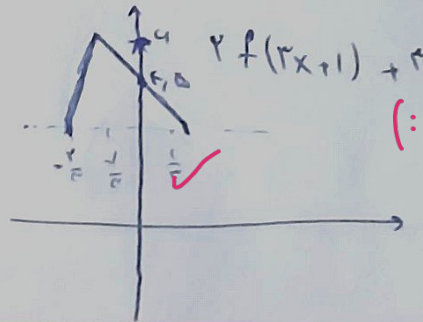
$$(2) (3)$$

$$-1 \leq x < 2 \rightarrow -2 \leq 2x < 4 \rightarrow -2 \leq 3x+1 < 10 \rightarrow -1 \leq \frac{3x+1}{2} < 5$$

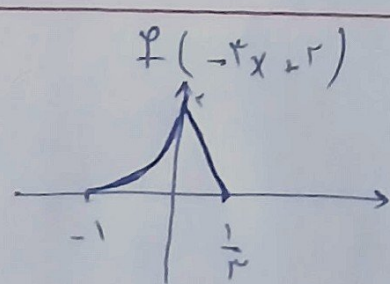
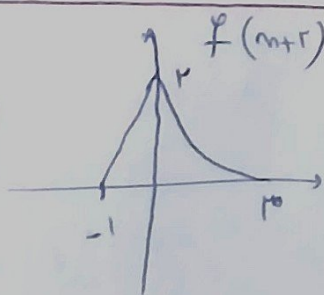
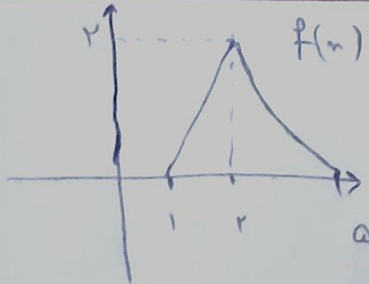
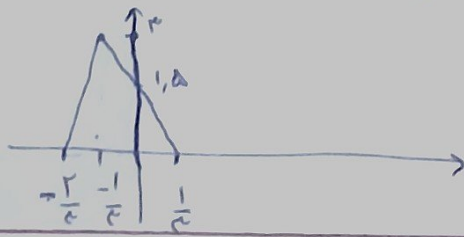
$$\rightarrow -1 \leq 2-5x < 5 \rightarrow -3 \leq -5x < 3 \rightarrow -\frac{3}{5} \leq x \leq \frac{3}{5} \rightarrow D = \left(-\frac{3}{5}, \frac{3}{5}\right]$$



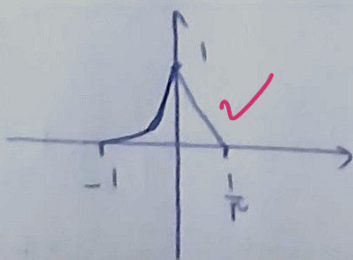
$$2f(3x+1)$$



تغییرات و انقباض:



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



$$y = -\frac{1}{r}x^r + \frac{r}{a}x + 1 \quad x_{\max} = -\frac{b}{r/a} \rightarrow -\frac{r}{a} = \frac{r}{a} \quad y_{\max} = \frac{r/a}{r/a}$$

$$\left(\frac{r}{a}, \frac{r/a}{r/a}\right) \rightarrow (r, r) \rightarrow \left(r, -\frac{1}{a}\right)$$

$$-\frac{1}{r}x^r + \frac{r}{a}x + 1 = -\frac{r/a}{r/a} \rightarrow -\frac{1}{r}x^r + \frac{r}{a}x + \frac{r/a}{r/a} \rightarrow -\frac{r}{a} \pm \sqrt{\frac{r/a}{r/a} + \frac{r/a}{r/a}} \rightarrow \frac{r}{a} \pm \sqrt{\frac{r/a}{r/a} + \frac{r/a}{r/a}}$$

$$f(n) \rightarrow 1, f$$

$$1 - r f\left(\frac{rx+r}{r}\right) \rightarrow x = \frac{r}{r}, y = \frac{r}{r} \rightarrow \Delta B \cdot -\frac{1}{r}x - y = \frac{r}{r}$$

$$D_f = (a \quad r)$$

$$D_g = [-1 \quad b]$$

$$L D_f(m-1) = (a+1 \quad a) \rightarrow D_g(m+1) = [-r \quad b-1]$$

$$\rightarrow (a+1 \quad a) \cap [-r \quad b-1] \rightarrow (a+1 \quad b-1)$$

$$\rightarrow a+1 = -r \quad b-1 = a \rightarrow \underline{a = -r}, \underline{b = 4}$$

$$\rightarrow a-b = -r-4 = \underline{-9}$$

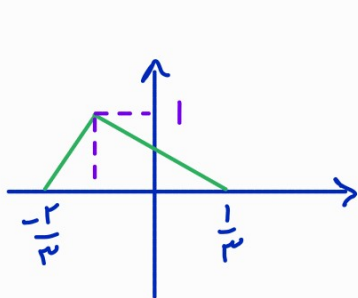
$$f\left(\frac{m}{r} + 1\right) \rightarrow [-r \quad +a]$$

$$-r \leq m \leq a \rightarrow -\frac{r}{r} + 1 \leq \frac{m}{r} + 1 \leq \frac{a}{r} + 1 \rightarrow -\frac{1}{r} \leq \frac{m}{r} + 1 \leq r/a$$

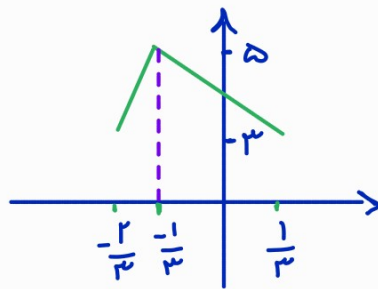
$$\rightarrow D_f(m) = \left[-\frac{1}{r} \quad r/a\right] \quad \sqrt{|rf(m)-r|} \rightarrow |R \cap D_f(m)|$$

$$\rightarrow D_{g_r} = [-1/a \quad r/a]$$

$$f(n) = \left|\frac{n+1}{rx+1}\right| \xrightarrow{\text{substitution}} \left|\frac{n-1}{rx-r}\right| \xrightarrow{\text{substitution}} \left|\frac{n-1}{rx-r}\right| + 1$$



$$y = f(2n+1)$$



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

-4

$$\text{رأس: } (h, k) \xrightarrow{\text{معادله خط}} y = a(n-h)^2 + k = -\frac{1}{4}n^2 + \frac{1}{2}n + 1 \rightarrow a = -\frac{1}{4}$$

-5

$$\text{رأس: } (4, 3) \rightarrow y = -\frac{1}{4}(n-4)^2 + 3 \xrightarrow{y=0} -\frac{1}{4}(n-4)^2 = -3 \rightarrow \begin{cases} n=7 \\ n=1 \end{cases}$$

$$D_{y_1} = [-3, 5] \rightarrow -3 \leq n \leq 5 \rightarrow -\frac{1}{4} \leq \frac{n}{4} + 1 \leq \frac{5}{4} \Rightarrow D_f = \left[-\frac{1}{4}, \frac{5}{4}\right]$$

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

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

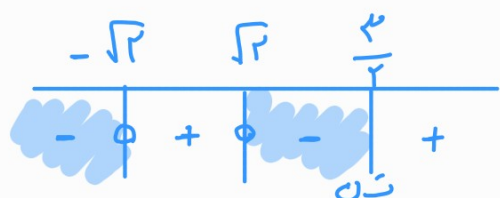
$$g(n) = \left| \frac{(n-2)+1}{2(n-2)+1} \right| + 1 = \left| \frac{n-1}{2n-3} \right| + 1$$

-10

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

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

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



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