

$$D_{f(x)} = [-2, 4] \rightarrow -2 \leq \frac{3x+2}{5} \leq 4 \rightarrow -10 \leq 3x+2 \leq 20$$

$$\rightarrow -12 \leq 3x \leq 18 \rightarrow -4 \leq x \leq 6 \rightarrow D = [-4, 6]$$

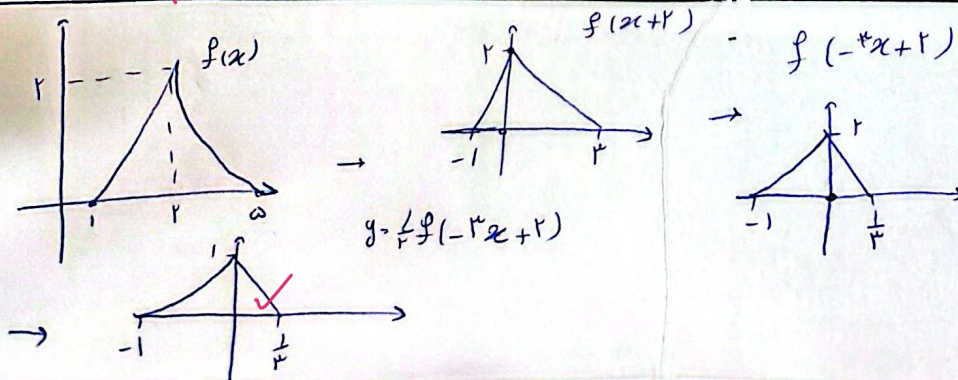
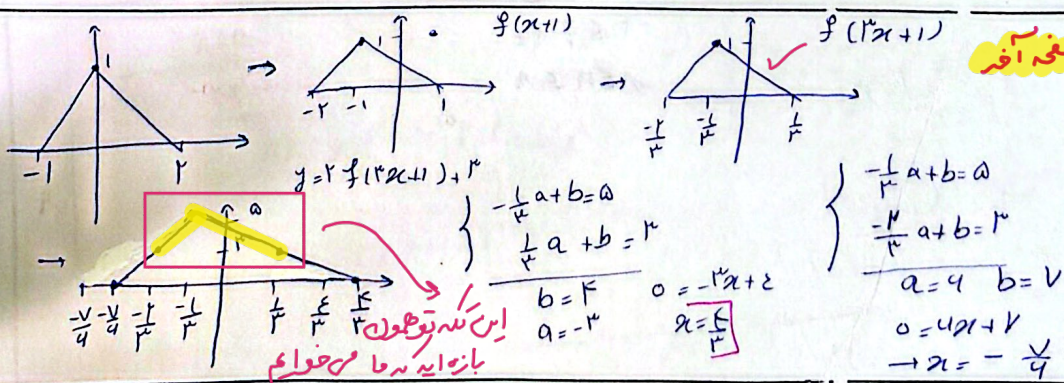
$$D = [-2, 4] \rightarrow -2 \leq x \leq 4 \rightarrow -4 \leq 3x \leq 12 \rightarrow -8 \leq 3x-2 \leq 10$$

$$D_{f(3x-2)} = [-8, 10]$$

$$D_{f\left(\frac{3x+1}{2}\right)} = [-1, 3] \rightarrow -1 \leq \frac{3x+1}{2} \leq 3 \rightarrow -2 \leq 3x+1 \leq 6$$

$$\rightarrow -3 \leq 3x \leq 5 \rightarrow -1 \leq x \leq \frac{5}{3}$$

$$\rightarrow \frac{1}{5} \geq x > -\frac{3}{5}$$



$$y = -\frac{1}{r}x^2 + \frac{1}{a}x + 1 \rightarrow 0 \quad \left| \quad x = \frac{-b}{2a} = \frac{-\frac{1}{a}}{-\frac{2}{r}} = \frac{r}{2a}$$

$$y = \frac{1}{a}$$

$$\frac{y - \frac{1}{a}}{\left(\frac{1}{r}\right)^2} \rightarrow y = -\frac{1}{r}(x - \frac{r}{2a})^2 + \frac{1}{a} \rightarrow -\frac{1}{r}(x - \frac{r}{2a})^2 + \frac{1}{a} = 0 \rightarrow (x - \frac{r}{2a})^2 = \frac{r}{a}$$

$$\rightarrow x - \frac{r}{2a} = \pm \sqrt{\frac{r}{a}} \quad \left\{ \begin{array}{l} x = 1 \\ x = \sqrt{r} \end{array} \right.$$

$$f^{-1}(f(x)) = (1, \frac{1}{a}) \rightarrow f(r(x+1)) = f(1) \rightarrow r(x+1) = 1 \rightarrow rx = -1 \rightarrow x = -\frac{1}{r} = \alpha$$

$$y = 1 - r f(r(x+1)) \quad x = -\frac{1}{r} \quad y = 1 - r f(1) = 1 - r \cdot \frac{1}{a} = 1 - \frac{r}{a} = \beta$$

$$\alpha \beta = \frac{1}{r} \cdot \frac{r}{a} = \frac{1}{a}$$

$$D_f = (a, \infty] \quad D_g = [-1, b) \rightarrow D_{f \circ g}(x-1) \Rightarrow a < x-1 \leq \infty$$

$$D_{f \circ g}(x+1) \rightarrow -1 \leq x+1 < b \rightarrow -2 \leq x < b-1$$

$$(a+1, \infty] \cap [-2, b-1) = (-2, a) \rightarrow \begin{cases} a+1 = -2 \rightarrow a = -3 \\ b-1 = a \rightarrow b = -2 \end{cases}$$

$$a-b = -3 - (-2) = -1$$

$$D_{f \circ g}(x+1) = [-2, \infty] \rightarrow D_{f \circ g}(x) \quad -\frac{1}{r} \leq \frac{x}{r} \leq \frac{\infty}{r} \rightarrow D = \left[-\frac{1}{r}, \infty\right] = D$$

$$R_{f \circ g}(x+1) = R_{f \circ g}(x) = [-1, 2] \quad f(x) \in [-1, 2] \rightarrow \infty \leq r f(x) - 2 \leq 1$$

$$\rightarrow 0 \leq |r f(x) - 2| \leq \infty \rightarrow 0 \leq \sqrt{|r f(x) + 1|} \leq \sqrt{\infty}$$

$$R_{\sqrt{r f(x) + 1}} = [0, \sqrt{\infty}]$$

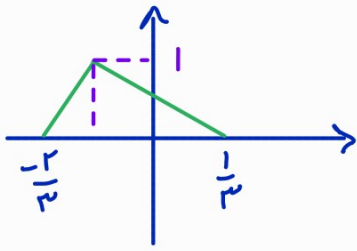
$$f(x) = \left| \frac{x+1}{rx+1} \right| \xrightarrow{\text{بهره گیری}} \left| \frac{(x-1)+1}{r(x-1)+1} \right| = \left| \frac{x-1}{rx-1} \right| \xrightarrow{\text{بهره گیری}} g = \left| \frac{x-1}{rx-1} \right| + 1$$

$$x + \left| \frac{x-1}{rx-1} \right| + 1 < 0 \rightarrow \left| \frac{x-1}{rx-1} \right| < -x-1 \rightarrow -x-1 > 0 \rightarrow x < -1$$

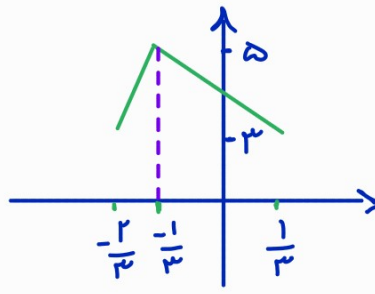
$$-(-x-1) < \frac{x-1}{rx-1} < -x-1 \rightarrow x+1 < \frac{x-1}{rx-1} \rightarrow \frac{rx^2 - rx - 1}{rx-1} < 0$$

$$\rightarrow x < \frac{1-\sqrt{5}}{r} \quad \frac{x-1}{rx-1} < -x-1 \rightarrow \frac{rx^2 - x - 1}{rx-1} < 0 \rightarrow x < -\sqrt{r}$$

$$\Phi \cap \Phi = x \in (-\infty, -\sqrt{r})$$



$$y = f(r_{n+1})$$



$$y = rf(r_{n+1}) + r$$

-r