

$$D_{f(n)} = [-1, 1] \Rightarrow D_{f(\frac{1}{\omega}n+1)} = ?$$

10

von f über n nach 10

(1)

$$-1 \leq n \leq 1 \xrightarrow{\text{mit } \frac{1}{\omega}} -1 \leq \frac{1}{\omega}n+1 \leq 1 \xrightarrow{\text{mit } \omega} -\omega \leq n+1 \leq \omega \xrightarrow{\text{mit } -1} -1-\omega \leq n \leq \omega-1$$

$$\Rightarrow D_{f(\frac{1}{\omega}n+1)} = [-1-\omega, \omega-1] \checkmark$$

$$D = [-1, 1] \\ f(1-\omega n)$$

$$D_{f(n)} = ?$$

(1)

von f

$$-1 \leq n \leq 1 \xrightarrow{\text{mit } \omega} -\omega \leq \omega n \leq \omega \xrightarrow{\text{mit } -1} -1-\omega \leq \omega n-1 \leq \omega-1 \Rightarrow D_{f(n)} = [-1-\omega, \omega-1] \checkmark$$

$$D_{f(\frac{1}{\omega}n+1)} = [-1, 1]$$

$$D_{f(1-\omega n)} = ?$$

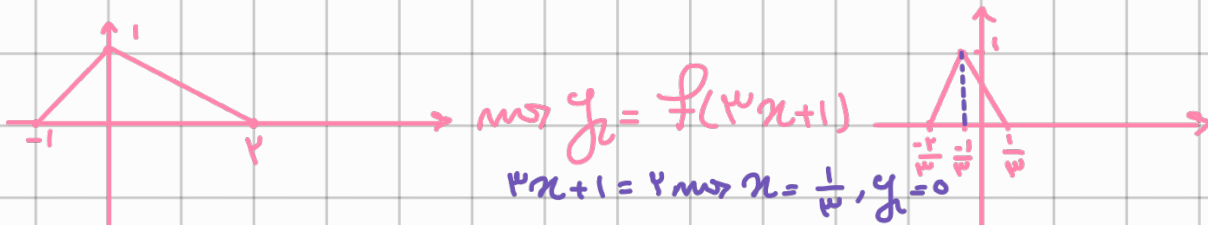
(1)

von f

$$-1 \leq n \leq 1 \xrightarrow{\text{mit } \omega} -\omega \leq \omega n \leq \omega \xrightarrow{\text{mit } +1} -\omega+1 \leq \omega n+1 \leq \omega+1 \xrightarrow{\text{mit } \frac{1}{\omega}} -1+\frac{1}{\omega} \leq n+1 \leq 1+\frac{1}{\omega}$$

$$-1 \leq 1-\omega n \leq 1 \xrightarrow{\text{mit } -\omega} -\omega \leq -\omega n \leq \omega \Rightarrow -\frac{\omega}{\omega} \leq n \leq \frac{\omega}{\omega}$$

$$\Rightarrow D_{f(1-\omega n)} = (-\frac{\omega}{\omega}, \frac{\omega}{\omega}) \checkmark$$



$$\Rightarrow y_0 = f(\frac{1}{\omega}n+1)$$

$$\frac{1}{\omega}n+1 = 1 \Rightarrow n = \frac{\omega}{\omega}, y_0 = 1$$

$$\frac{1}{\omega}n+1 = -1 \Rightarrow n = -\frac{\omega}{\omega}, y_0 = 0$$

$$\frac{1}{\omega}n+1 = 0 \Rightarrow n = -\frac{\omega}{\omega}, y_0 = 1$$

(1)

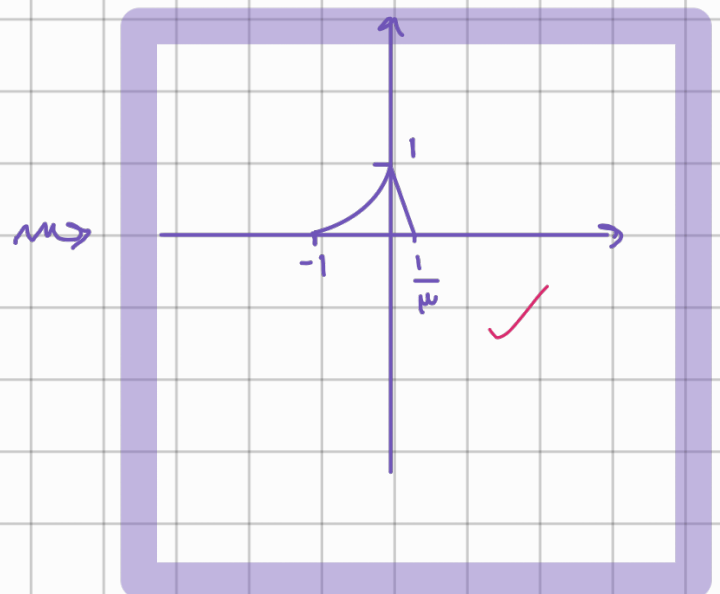
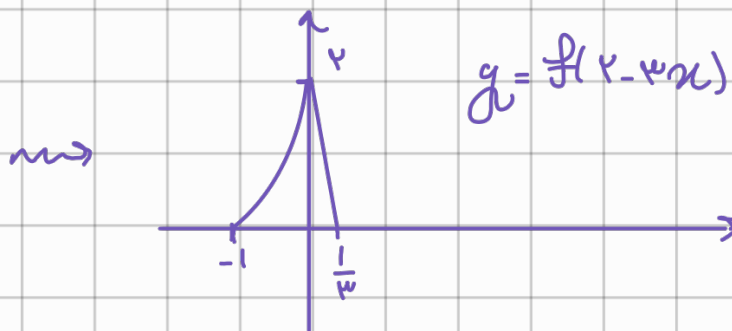
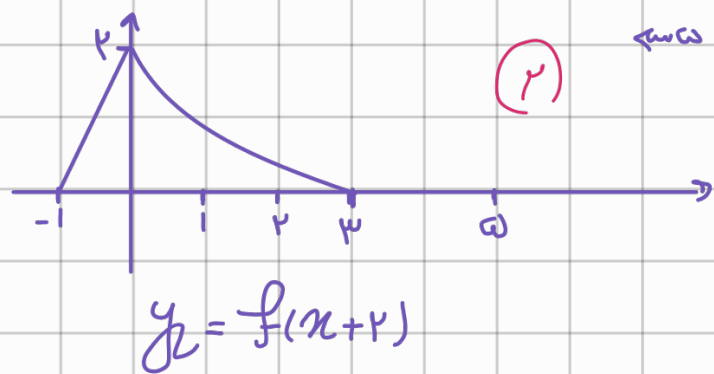
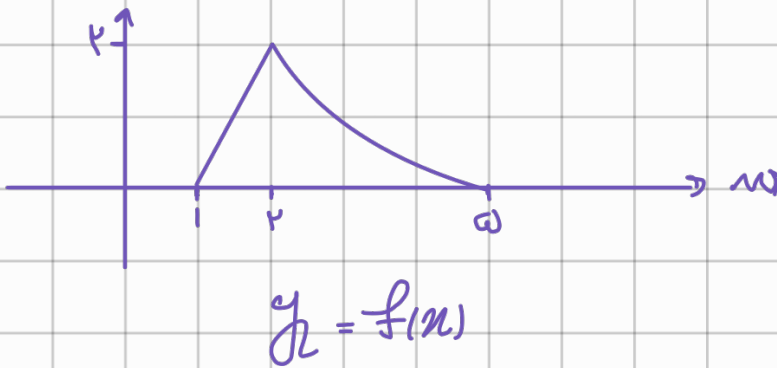
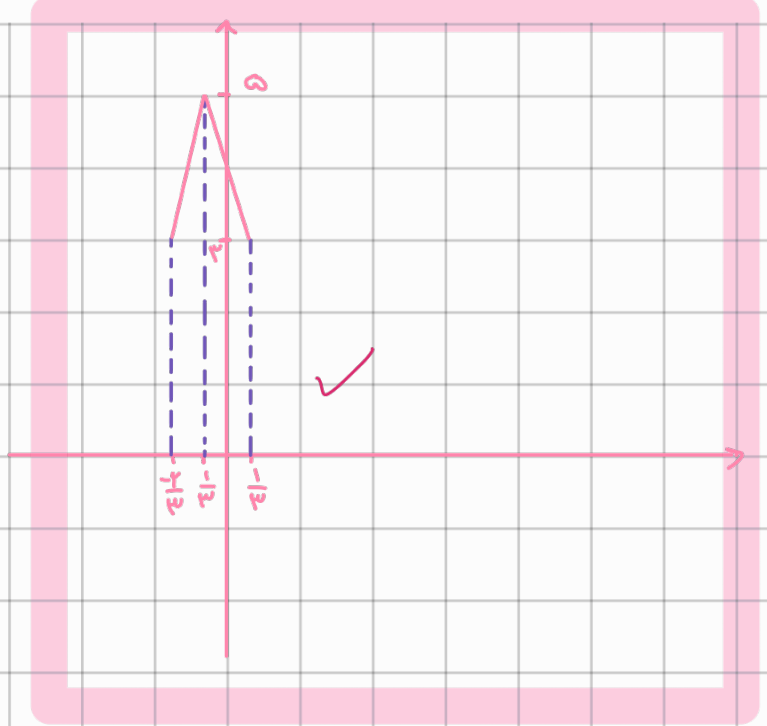
von f

$$\Rightarrow g_k = \gamma f(\psi x + 1) + \psi$$

$$x = -\frac{\gamma}{\psi} \Rightarrow g'_k = 0 \Rightarrow g_k = \gamma x_0 + \psi \Rightarrow y = \psi$$

$$x = -\frac{1}{\psi} \Rightarrow g'_k = 1 \Rightarrow g_k = \gamma x_1 + \psi \Rightarrow y = \omega$$

$$x = \frac{1}{\psi} \Rightarrow g'_k = 0 \Rightarrow g_k = \gamma x_0 + \psi \Rightarrow y = \psi$$



معادله ای داریم که در آن x و y به هم وابسته اند. $y = (x-4)^2$ (۲)

در این معادله، x و y به هم وابسته اند. $y = (x-4)^2 + 3$

در این معادله، x و y به هم وابسته اند. $y = (x-4)^2 + 3$

برای این که y به x وابسته باشد، $y = -\frac{1}{3}(x-4)^2 + 3$

معادله را حل می‌کنیم.

$y=0 \Rightarrow -\frac{1}{3}(x-4)^2 + 3 = 0 \Rightarrow \frac{1}{3}(x-4)^2 = 3 \Rightarrow (x-4)^2 = 9 \Rightarrow x-4 = \pm 3$

$\Rightarrow x = 1, 7$

$3x + 2 = 1 \Rightarrow 3x = -1 \Rightarrow x = -\frac{1}{3} = \alpha$ (۱)

$y = 1 - 2f(3x+2) \xrightarrow{x=-\frac{1}{3}} 1 - 2f(1) = 1 - 1 = 0 = \beta$ (۲)

(۱)، (۲) $\Rightarrow \alpha\beta = -\frac{1}{3} \times 0 = 0$

$D_f = (a, 4], f(x-1) \Rightarrow a < x-1 \leq 4 \Rightarrow a+1 < x \leq 5 \Rightarrow D_f = (a+1, 5]$ (۱)

$D_g = [-1, b), g(x+1) \Rightarrow -1 \leq x+1 < b \Rightarrow -2 \leq x < b-1 \Rightarrow D_g = [-2, b-1)$ (۲)

$y = f(x-1) + g(x+1) \Rightarrow D_y = (-2, 5) \Rightarrow D_y = D_{f(x-1)} \cap D_{g(x+1)}$ (۱)، (۲)

$(a+1, 5] \cap [-2, b-1) = (-2, 5) \Rightarrow a+1 = -2 \Rightarrow a = -3$
 $b-1 = 5 \Rightarrow b = 6 \Rightarrow a-b = -3-6 = -9$

$$g(n) = g_{\frac{1}{2}} = \sqrt{|2f(n) - 3|} \quad \leadsto |2f(n) - 3| \geq 0 \quad \leadsto \text{Bewertungsbereich für } 2f(n) \\ D_g = D_f \quad \text{und} \quad (1)$$

$$m(n) = g_{\frac{1}{2}} = f\left(\frac{n}{2} + 1\right) \quad \leadsto D_m = [-3, \infty) \quad \leadsto -3 \leq n \leq \infty \quad \leadsto -\frac{3}{2} \leq \frac{n}{2} \leq \frac{\infty}{2}$$

$$\leadsto -\frac{1}{2} \leq \frac{n}{2} + 1 \leq \frac{3}{2} \quad \leadsto D_g = D_f = \left[-\frac{1}{2}, \frac{3}{2}\right]$$

$$D_f \leadsto -1 \leq f(n) \leq 2 \quad \leadsto -2 \leq 2f(n) \leq 4 \quad \leadsto$$

$$-3 \leq 2f(n) - 3 \leq 1 \quad \xrightarrow{\text{Bewertungsbereich}} \quad 0 \leq |2f(n) - 3| \leq 4 \quad \xrightarrow{\text{Bewertungsbereich}} \quad$$

$$0 \leq \sqrt{|2f(n) - 3|} \leq \sqrt{4} \quad \leadsto D_g = [0, 2]$$

$$f(n) = \left| \frac{n+1}{2n+1} \right| \quad \xrightarrow{\text{Bewertungsbereich}} \quad \left| \frac{(n-2)+1}{2(n-2)+1} \right| + 1 = g(n) \quad (1)$$

$$g(n) = \left| \frac{n-1}{2n-3} \right| + 1 \quad \leadsto \quad \frac{1}{+0} - \frac{\frac{1}{2}}{0+}$$

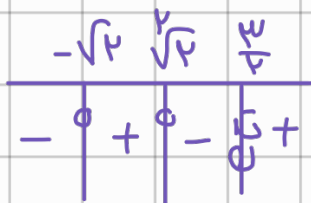
$g(x) + x \rightarrow$

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

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

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

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



برای $x < -\sqrt{2}$ جواب - است

مجموعه جواب $= (-\infty, -\sqrt{2})$

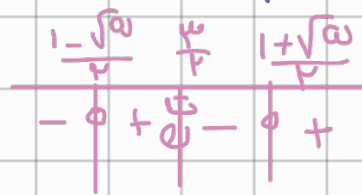
$$x + \frac{1-x}{2x-3} + 1 =$$

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

$$\xrightarrow{x=\frac{1\pm\sqrt{5}}{2}}$$

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

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



برای $\frac{3}{2} < x < 1$ جواب +

است پس در این بازه جوابی

ندارد

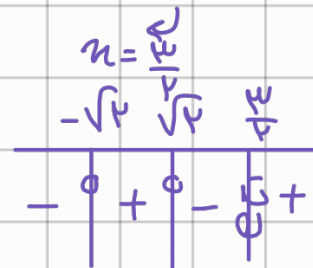
$\frac{3}{2}$

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

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

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

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



برای $x > \frac{3}{2}$ جواب +

است پس در این بازه جوابی

ندارد