

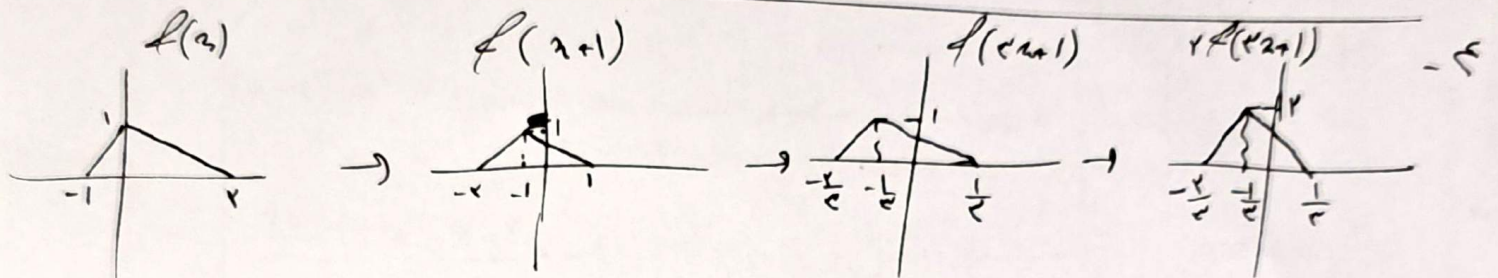
درین مثالان A را پیدا کنید

$$-2 \leq x \leq 5 \Rightarrow -2 \leq 3x+2 \leq 17 \Rightarrow -\frac{2}{3} < \frac{3x+2}{3} \leq \frac{17}{3} \Rightarrow D_f = \left[-\frac{2}{3}, \frac{17}{3}\right]$$

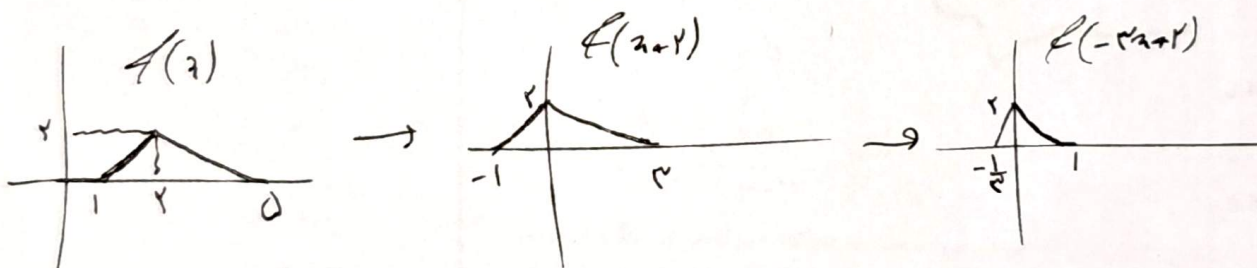
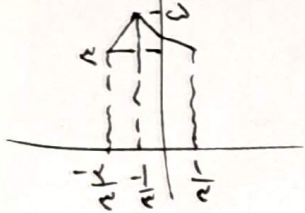
$$x \geq 2 \leq 5 \Rightarrow -1 \leq 3x-2 \leq 5 \Rightarrow D_f = [-1, 5]$$

$$-1 \leq x < 5 \Rightarrow -2 \leq 3x+1 < 16 \Rightarrow -1 \leq \frac{3x+1}{3} < \frac{16}{3} \Rightarrow D_f = \left[-1, \frac{16}{3}\right)$$

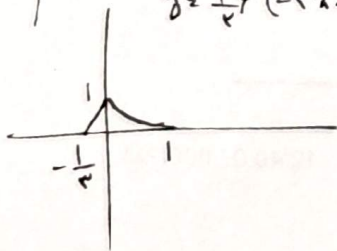
$$-1 \leq x-2 \leq 5 \Rightarrow -3 \leq -2x \leq 7 \Rightarrow -\frac{3}{2} < x \leq \frac{7}{2} \Rightarrow D_f = \left(-\frac{3}{2}, \frac{7}{2}\right]$$



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



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



$$\text{Ext} \begin{cases} x_1 = \frac{5}{2} \\ y_1 = \frac{11}{20} \end{cases}$$

$$\frac{5}{2} + \alpha = 5 \Rightarrow \alpha = \frac{15}{2}$$

$$\frac{11}{20} + \beta = 5 \Rightarrow \beta = \frac{99}{20}$$

-4

$$y = -\frac{1}{4}x^2 + \frac{5}{2}x + 1 = -\frac{99}{20} \Rightarrow -20x^2 + 50x + 20 = -198 \Rightarrow 20x^2 - 50x - 218 = 0$$

$$\Rightarrow (0.2 - 11)(0.2 + 12) = 0 \Rightarrow \begin{cases} x_1 = \frac{11}{20} + \frac{1}{20} = \frac{12}{20} = \frac{3}{5} \\ x_2 = -\frac{12}{20} + \frac{1}{20} = -\frac{11}{20} \end{cases}$$

$$\begin{cases} 5\alpha + 2 = 1 \Rightarrow \alpha = -\frac{1}{5} \\ 1 - 5f(1) = -5 \Rightarrow \beta = -5 \end{cases} \Rightarrow \alpha, \beta = \frac{1}{5}$$

-9

$$\begin{cases} P_{f(2-1)} = (a+1, b) \\ P_{f(2+1)} = (-2, b-1) \\ P_{f(2-1)} \cap P_{f(2+1)} = (-2, b) \end{cases} \Rightarrow \begin{cases} a+1 = -2 \Rightarrow a = -3 \\ b-1 = b \Rightarrow b = 9 \\ \Rightarrow a-b = -9 \end{cases}$$

5/1

$$-5 \leq x \leq 5 \Rightarrow -0.5 \leq \frac{x+1}{2} \leq 5.5 \Rightarrow P_f = [-0.5, 5.5]$$

5/9

$$\Rightarrow P_{g_1} = [-0.5, 5.5]$$

$$P_{g_1} = R_{f(\frac{x}{2})} = R_{f(x)} \Rightarrow -1 \leq f(x) \leq 1 \Rightarrow -0.5 \leq f(x) - 0.5 \leq 1$$

$$\Rightarrow 0 \leq |f(x) - 0.5| \leq 1 \Rightarrow 0 \leq y_1 \leq \sqrt{2} \Rightarrow R_{g_1} = [0, \sqrt{2}]$$

$$g(x) = f(x-1) + 1 = \left| \frac{(x-1)+1}{x(x-1)+1} \right| + 1 = \left| \frac{x}{x^2-x+1} \right| + 1$$

5/10

$$\left. \begin{matrix} g(x) + 2 < 0 \\ g(x) < 0 \end{matrix} \right\} \Rightarrow 2 < 0 \Rightarrow g(x) = \frac{x}{x^2-x+1} + 1 \geq \frac{x^2-1}{x^2-x} \Rightarrow g(x) + 2 = \frac{x^2-1}{x^2-x} + 1 < 0 \Rightarrow$$

$$x^2 - 1 \rightarrow x^2 - 1 + x^2 - x < 0 \Rightarrow 2x^2 - x - 1 < 0 \Rightarrow x^2 > 1 \Rightarrow \begin{cases} x > \sqrt{1} \\ x < -\sqrt{1} \end{cases} \Rightarrow x < -1$$