

D $f(x) = [-2, 4]$

(I): $\frac{3x+2-20}{5} \leq 0 \rightarrow x \leq 6$

(II): $\frac{3x+2}{5} \leq 4$
 $-2 \leq \frac{3x+2}{5} \leq 4$
 $-10 \leq 3x+2 \leq 20$
 $-12 \leq 3x \leq 18$
 $-4 \leq x \leq 6$

(II): $0 \leq \frac{3x+2}{5} \rightarrow -\frac{2}{3} \leq x$

$I \cup II = [-4, 6]$

$-2 \leq x \leq 3 \xrightarrow{+3} -2 \leq 3x \leq 9 \xrightarrow{-2} -4 \leq 3x-2 \leq 7$

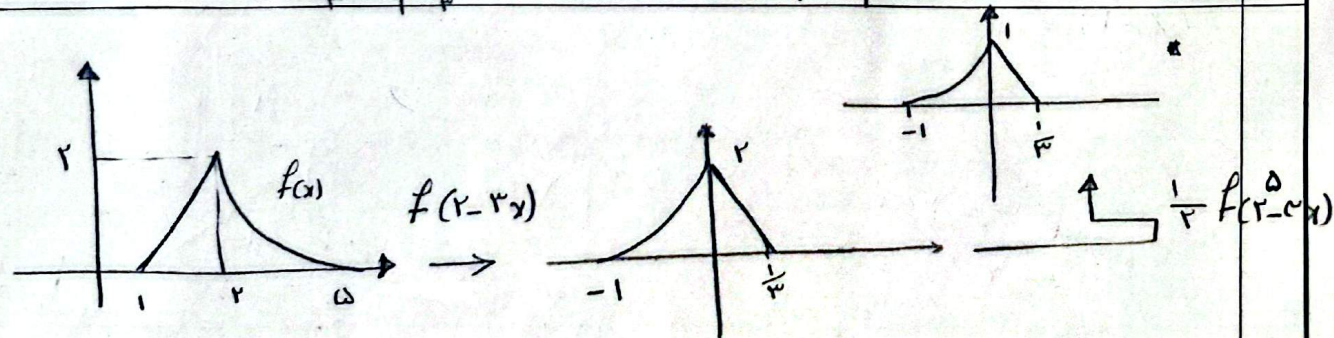
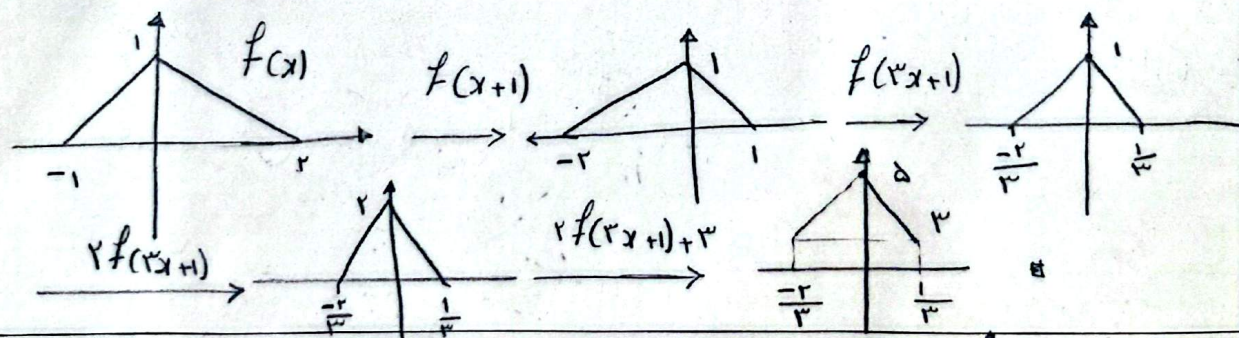
$-1 \leq x \leq 3 \xrightarrow{\times \frac{3}{2}} -\frac{3}{2} \leq \frac{3x}{2} \leq \frac{9}{2} \xrightarrow{+\frac{1}{2}} -1 \leq \frac{3x+1}{2} \leq 5$

(II): $-1 \leq \frac{3x+1}{2} \leq 5$
 $-2 \leq 3x+1 \leq 10$
 $-3 \leq 3x \leq 9$
 $-1 \leq x \leq 3$

(I): $-2 \leq 5x \rightarrow -\frac{2}{5} \leq x$

(II): $5x \leq 3 \rightarrow x \leq \frac{3}{5}$

$U \Rightarrow -\frac{2}{5} \leq x \leq \frac{3}{5}$



$f(x+2)$

$$-\frac{1}{x} \left(x + \frac{3}{2}\right)^2 + \frac{11}{20} \rightarrow -\frac{1}{x} (x-1)^2 + 3 \rightarrow$$

$$-\frac{1}{x} x^2 + \frac{1}{2} x - \frac{1}{2} = 0 \quad \boxed{x=1}$$

6

$$f(x) = -(x+1)(x-1) \xrightarrow{f(x+1)} -(x+3)(x-1) \xrightarrow{f(3x+1)} -(3x+3)(3x-1) \rightarrow$$

$$\xrightarrow{2f(3x+1)} -2(3x+3)(3x-1) \xrightarrow{1-2f(3x+1)} 11 + 2(3x+3)(3x-1) = 18x^2 + 14x - 5$$

7

$$\begin{cases} x \geq -\frac{1}{x} \rightarrow \alpha \\ y \geq -1 \rightarrow \beta \end{cases} \rightarrow \alpha\beta = \frac{1}{x}$$

$$Df(x) \in (a, f] \rightarrow Df(x-1) = (a-1, 5]$$

$$Dg(x) = [-1, b) \rightarrow Dg(x+1) = [-1, b-1)$$

$$a-b = -1-4 = -5$$

$$\begin{cases} (-1, 5) \\ b=6 \\ a=-1 \end{cases}$$

8

$$-3 \leq x \leq 5 \xrightarrow{+1} -2 \leq \frac{x}{2} \leq \frac{5}{2} \xrightarrow{+1} \left(-\frac{1}{2} \leq \frac{x+1}{2} \leq \frac{7}{2}\right)$$

الأسفل

جواب قد يكون مربع اربعة زائفة

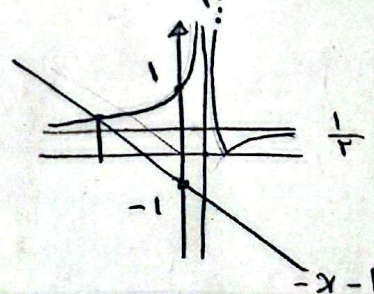
9

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

$$x \in (-\infty, \frac{1-\sqrt{5}}{2})$$

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

$$\frac{-1-1}{-1-1}$$



10

$$1 - 8(1) \leq -1 - 2x \leq 1 - x \xrightarrow{+1} -7 \leq -2x \leq 2 \xrightarrow{-2} \frac{7}{2} \geq x \geq -1$$