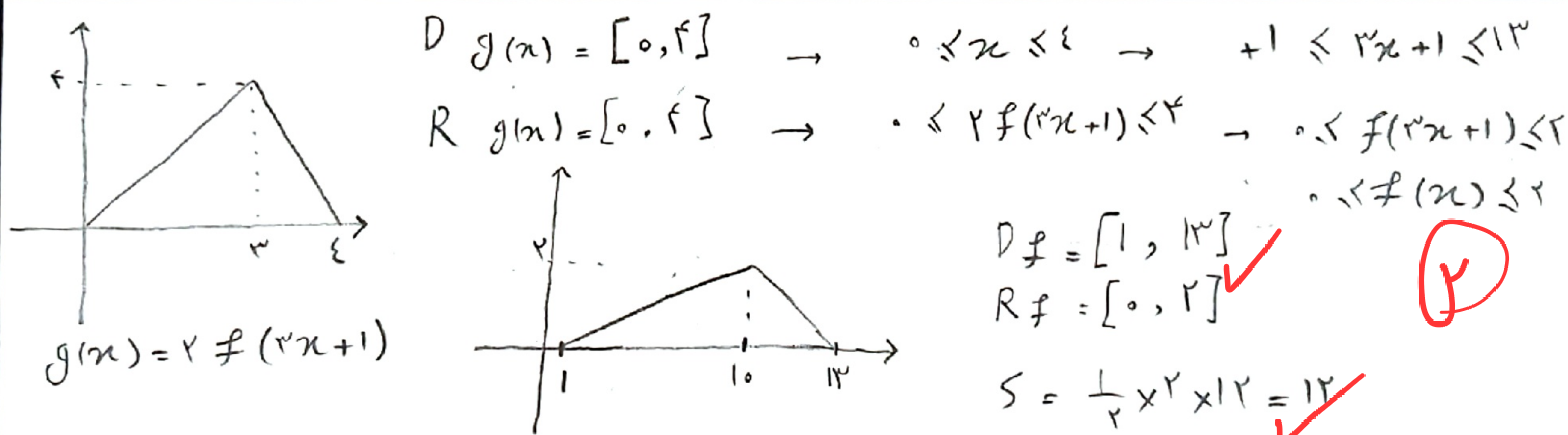


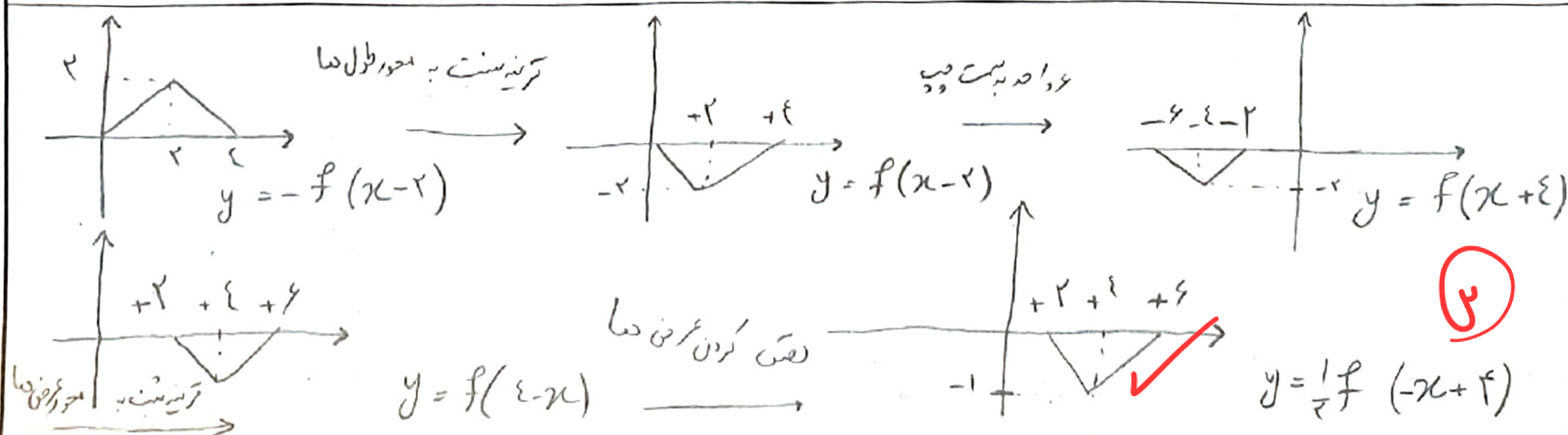
الف) $D_{f(x)} = [-1, 2] \rightarrow -1 \leq x \leq 2$, $f(3x-2) \rightarrow -1 \leq 3x-2 \leq 2$
 $-2 \leq 3x \leq 4$
 $-\frac{2}{3} \leq x \leq \frac{4}{3}$
 $D_{f(3x-2)} = [-\frac{2}{3}, \frac{4}{3}]$

ب) $D_{f(3x-2)} = [-1, 2] \rightarrow -1 \leq x \leq 2$
 $-12 \leq 3x \leq 6$
 $-12 \leq 3x-2 \leq -1$
 $f(x) \rightarrow -1 \leq x \leq -1$
 $D_{f(x)} = [-1, -1]$

دراحد بیست است: $(x-2) + \sqrt{x-2} - 2 = x-2 + \sqrt{x-4}$
 $y = x-2 + \sqrt{x-4} \rightarrow x = y-2 + \sqrt{y-4}$
 $x=y$
 $x = y-2 + \sqrt{y-4} \rightarrow y = y-2 + \sqrt{y-4} \rightarrow 2 = \sqrt{y-4}$
 $4 = y-4 \rightarrow y = 8$

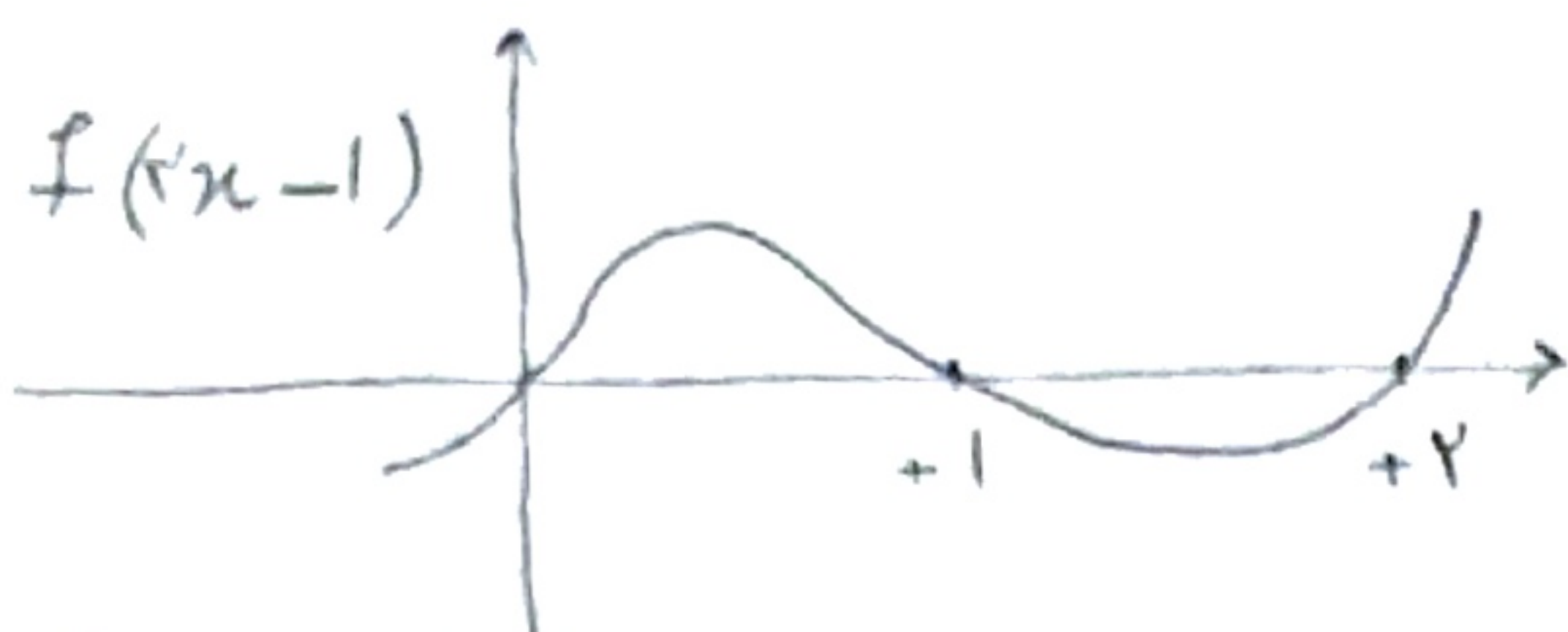


$y = a + \frac{1}{2} f(\frac{x-a}{2}) \rightarrow \frac{x-a}{2} = 2 \rightarrow x = 4+a \rightarrow A'(4+a, a-2)$
 $f(x) = y$
 $f(\frac{x-a}{2}) = \frac{y-a}{2}$
 $\frac{y-a}{2} = -2 \rightarrow y = a-4 \rightarrow A'(-2, -12)$
 $y = 2x-1 \rightarrow a-4 = 2(4+a) - 1 \rightarrow a-4 = 1+2a-1$
 $-4 = a$



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

$$\rightarrow -(x+2) f(2x-1) \geq 0$$



$$f(-1) = f(0) = f(2) = 0$$

$$\begin{array}{ccccccc} -2 & 0 & +1 & +2 \\ - & + & - & + & - \end{array}$$

$$Dy = [-2, 0] \cup [1, 2]$$

6

$$f(x) = |2x-3|+1$$

$$g(x) = |2x+2k-3|-2$$

$$f'(x) = |2(x+k)-3|+1$$

$$= |2x+2k-3|+1$$

$$f''(x) = |2x+2k-3|+1-2$$

$$= |2x+2k-3|-2$$

کدام حد است

محدوده یابین:

$$x \rightarrow -2 \rightarrow |-2|+1 = |2k-3|-2$$

$$2+3+1 = |2k-3|$$

$$6 = |2k-3| \rightarrow 2k-3 = 6 \rightarrow k = \frac{9}{2}$$

5

7

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

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

قرینه نسبت به محور طول ها

$$(2x-1)(x+3) = (2x-3)(x+1) + k(x+3)(x+1) \quad f''(x) = -\frac{2(\frac{x}{3})-1}{\frac{x}{3}+1}$$

میزان کردن طول لفظ

$$4x^2 + 6x - 6 = k(x^2 + 4x + 3)$$

$$(k-4)x^2 + (4k-6)x + (3k+6) = 0$$

ضریب x^2 صفر است

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

5

کدام حد است

$$\Delta = (4k-6)^2 - 4(k-4)(3k+6)$$

$$\rightarrow (k-4)x^2 + (4k-6)x + 3k+6 = 0$$

$$\Delta = 4((k-1)^2 + 12) > 0$$

$$\Delta \neq 0 \quad k-4=0 \rightarrow k=4$$

$$Dy_1 = [-2, 2]$$

$$\rightarrow -2 \leq x \leq 2 \rightarrow -1 \leq \frac{x}{3} \leq 1 \rightarrow y_2 = f(x-1)$$

$$Dy_2 = [0, 2]$$

$$Ry_1 = [-1, 1]$$

$$Ry_2 = [0, 2]$$

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

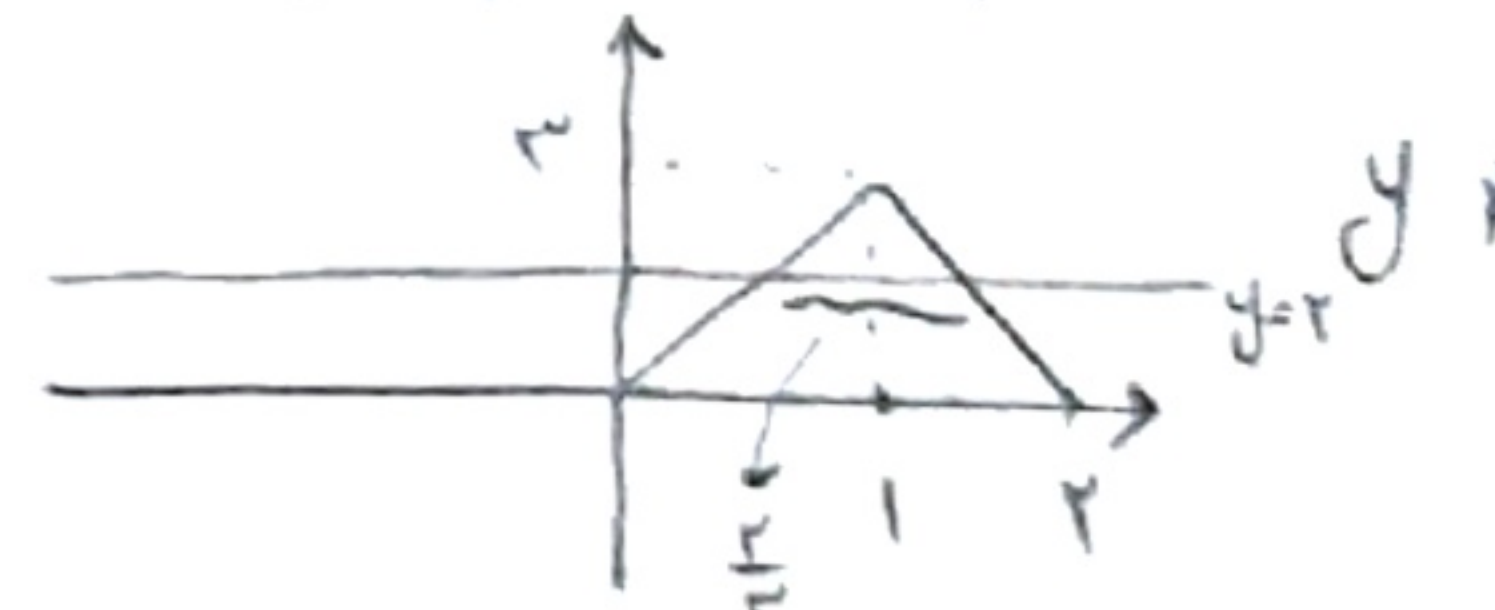
$$-2 \leq -f(\frac{x}{3}) \leq 0$$

$$+2 \geq f(\frac{x}{3}) \geq 0$$

$$-1 \leq x-1 \leq 1$$

$$0 \leq x \leq 2$$

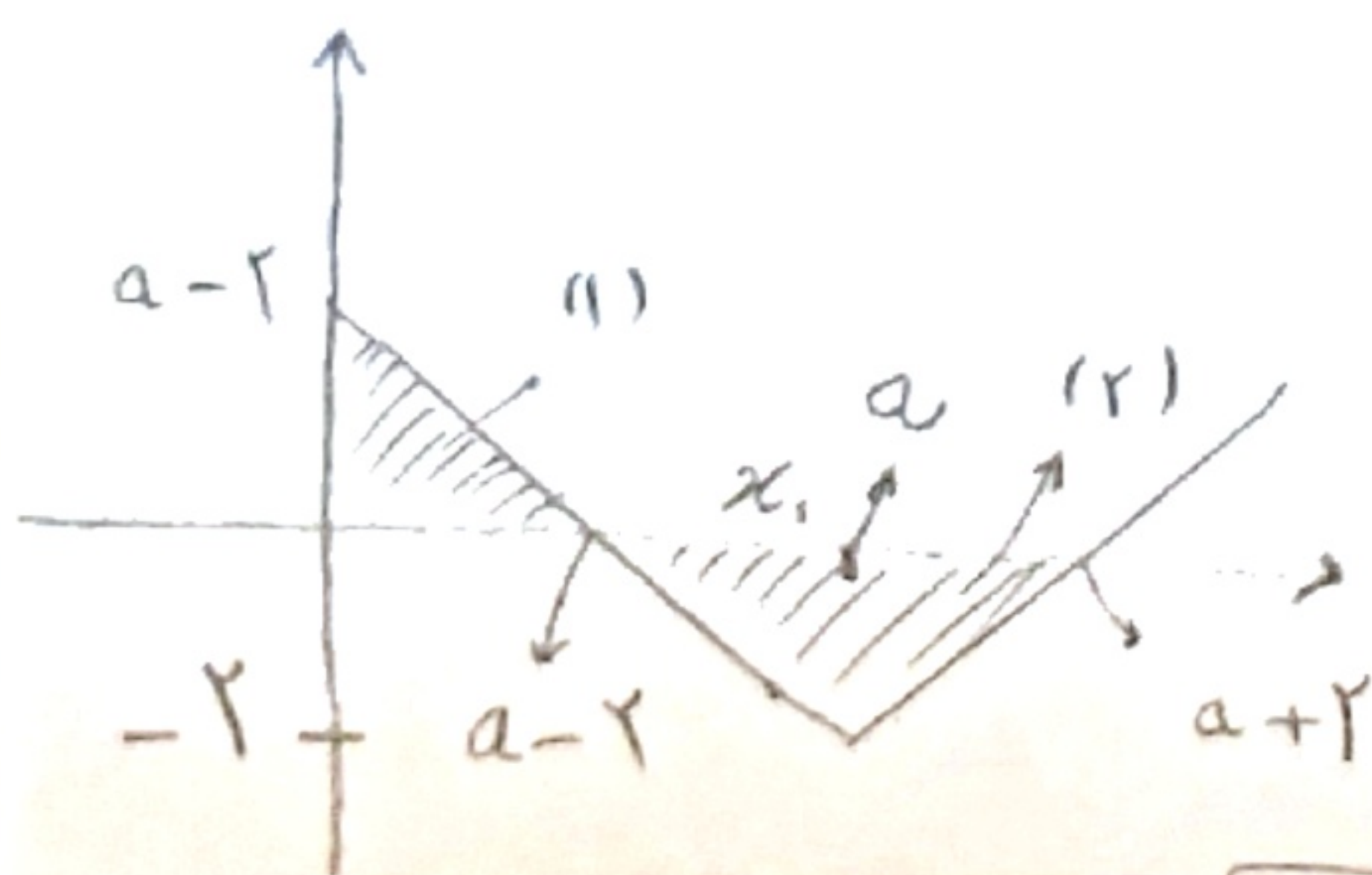
$$0 \leq f(x-1) \leq 2$$



$$S = \frac{1}{2} \times 1 \times \frac{2}{3} = \frac{1}{3}$$

5

9



$$x_1 = a$$

$$S = \frac{1}{2} (a-2)(a-2) + \frac{1}{2} \times 2 (a+2-a+2)$$

$$\frac{9}{2} = \frac{1}{2} (a-2)^2 + 4 \rightarrow \frac{1}{2} (a-2)^2 = \frac{1}{2}$$

5

10

$$(a-2)^2 = 1 \rightarrow a = 1, 3$$

$$f(\frac{1}{a}) = f(\frac{1}{3}) = |\frac{1}{3}-2|-2 = \frac{2}{3}$$