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17, 18

تکثیر اعداد صحیح، تکثیر کسرها، و تقاطع دو مجموعه

$$f(x) \Rightarrow D_f = [-2, 4]$$

(1)

$$f\left(\frac{3x+2}{5}\right)$$

$$\Rightarrow -2 \leq \frac{3x+2}{5} \leq 4 \rightarrow -10 \leq 3x+2 \leq 20$$

$$\rightarrow -12 \leq 3x \leq 18 \rightarrow \underline{-4 \leq x \leq 6}$$

$$\downarrow$$

$$D_f = [-4, 6]$$

$$f(3x-2) \rightarrow D_{f(3x-2)} = [-2, 4] \rightarrow -2 \leq x \leq 2 \rightarrow -6 \leq 3x \leq 8$$

(2)

$$D_f = ?$$

$$\rightarrow -1 \leq 3x-2 \leq 4$$

$$\underline{-1 \leq 3x-2 \leq 4}$$

$$f\left(\frac{3x+1}{2}\right) \rightarrow D_f = [-1, 3] \rightarrow -1 \leq x \leq 3 \rightarrow -3 \leq 3x \leq 9$$

(3)

$$f(2-5x) = ?$$

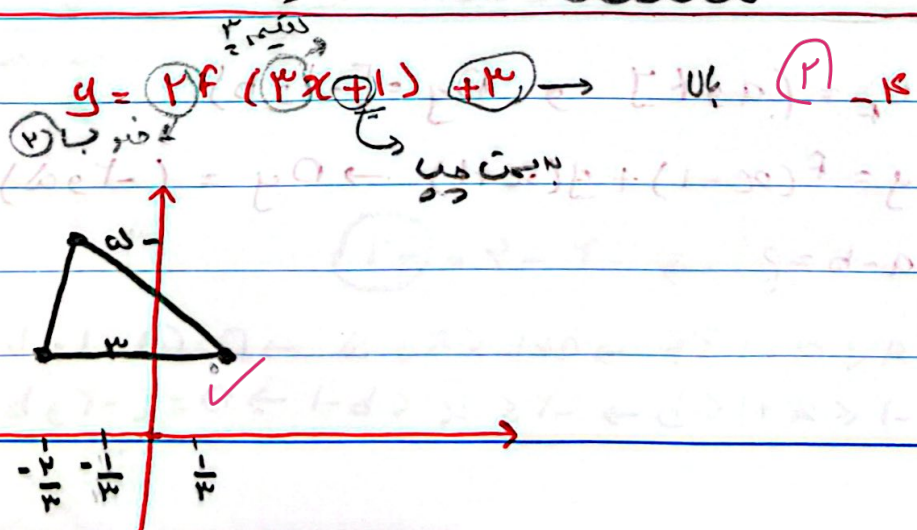
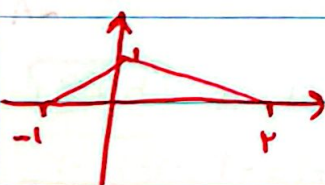
$$\rightarrow -2 \leq 3x+1 \leq 10$$

$$\rightarrow -1 \leq \frac{3x+1}{2} \leq 5$$

$$-1 \leq 2-5x \leq 5$$

$$[-1, 5] = D_f$$

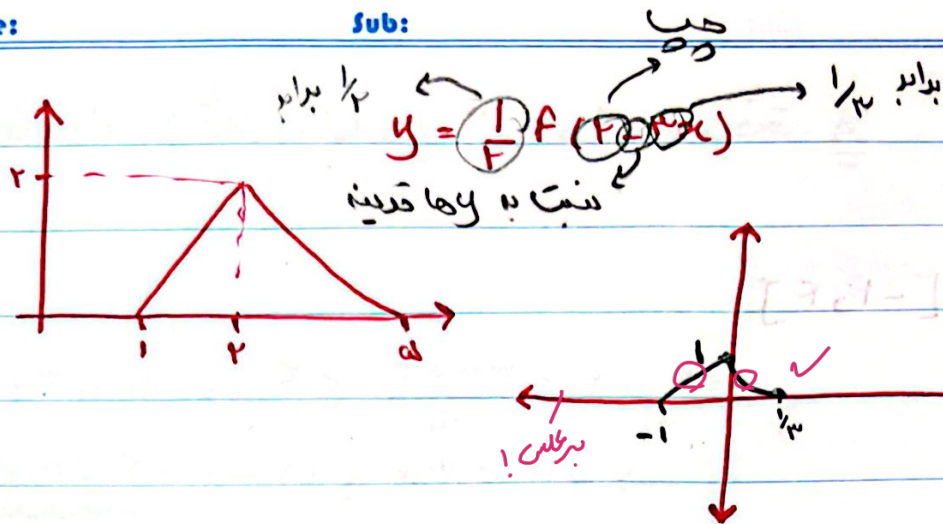
$$-3 \leq -5x \leq 3 \rightarrow -\frac{3}{5} \leq x \leq \frac{3}{5} \rightarrow \underline{-\frac{3}{5} \leq x \leq \frac{3}{5}}$$



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$$y = -\frac{1}{\mu} x^2 + \frac{2}{\mu} x + 1 \rightarrow x_S = -\frac{b}{2a} = -\frac{\frac{2}{\mu}}{2(-\frac{1}{\mu})} = \frac{1}{1} = 1 \quad (2)$$

$$y = -\frac{1}{\mu} (x-1)^2 + \mu = 0 \rightarrow \frac{1}{\mu} (x-1)^2 = \mu$$

$$\rightarrow (x-1)^2 = \mu$$

$$\rightarrow x-1 = \mu \rightarrow x = 1 + \mu$$

$$x-1 = -\mu \rightarrow x = 1 - \mu$$

د این نتایج قطع و کند

$$y = 1 - 2F(\mu x + 1) \rightarrow x_S = \frac{-1 + \mu}{2} = 1 \quad (2) \quad -v$$

$$\Rightarrow (1, 4) \rightarrow \mu a + 1 = 1 \rightarrow \mu a = -1 \rightarrow a = -\frac{1}{\mu}$$

$$\Rightarrow B = 1 - 2F(1) = 1 - 2(\mu) = 1 - 2\mu = 1 - 2 = -1$$

$$\Rightarrow AB = (-\frac{1}{\mu})(-1) = \frac{1}{\mu}$$

$$D_f = (a, 4] \text{ و } D_g = [-1, b)$$

$$y = f(x-1) + g(x+1) \rightarrow D_y = (-2, 5) \quad b-1 = 4 \rightarrow b = 5$$

$$a-b = ? \rightarrow -2 - 5 = -7$$

$$a+1 = -2 \rightarrow a = -3$$

$$a < x-1 \leq 4 \rightarrow a+1 < x \leq 5 \rightarrow D = (a+1, 5] \xrightarrow{n} (-2, 5)$$

$$-1 \leq x+1 < b \rightarrow -2 \leq x < b-1 \rightarrow D = [-2, b-1)$$

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$$y_r = \sqrt{|2F(x) - 3|} \rightarrow |2F(x) - 3| \geq 0 \rightarrow |F(x)| \geq \frac{3}{2} \rightarrow F(x) \geq \frac{3}{2} \quad \text{a}$$

$$y_r = F\left(\frac{x}{r} + 1\right) \rightarrow \text{د.} = [-1, 2] \quad x \in \left[\frac{3}{2}, \frac{5}{2}\right] \leftarrow y_r \text{ د.} \quad \text{b}$$

$$\hookrightarrow \left[\frac{3}{2} + 1, \frac{5}{2} + 1 \right] = \left[\frac{5}{2}, \frac{7}{2} \right] = D_{y_r}$$

$$\text{د.} y_r \text{ د.} \rightarrow R_{y_r} = [0, 1]$$

$$F(x) = \left| \frac{x+1}{2x+1} \right|$$

$$g(x) = F(x-2) + 1 = \left| \frac{x-1}{2x-3} \right| + 1 \quad \text{b}$$

$$x + g(x) < 0 \rightarrow \left| \frac{x-1}{2x-3} \right| < -x-1$$

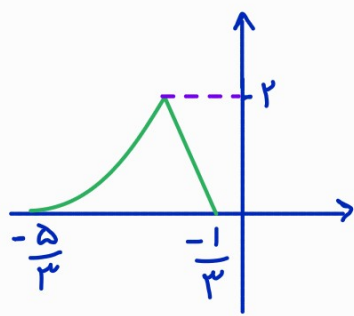
$$\oplus \text{ د.} \hookrightarrow -x-1 > 0 \rightarrow x < -1$$

$$\rightarrow \frac{x-1}{2x-3} < -x-1 \rightarrow \frac{x-1}{2x-3} + x+1 < 0$$

$$\rightarrow \frac{(x-1) + (x+1)(2x-3)}{2x-3} = \frac{2x^2 - 4}{2x-3} < 0 \rightarrow (-\infty, -\sqrt{2}) \cup (\sqrt{2}, \frac{3}{2})$$

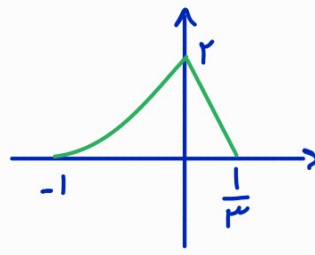
$$\text{نقطه} \rightarrow (-\infty, -\sqrt{2}) \quad x < -1$$

خسته نباشید ♥ ☺



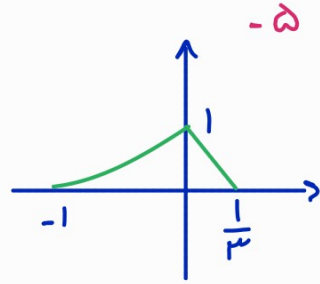
$$y = f(-r_n)$$

واحد به راست $\frac{r}{3}$



$$y = f(-r(n - \frac{r}{3}))$$

$$y = f(r - r_n)$$



$$y = \frac{1}{r} f(r - r_n)$$

$$D_{y_1} = [-r, \infty] \rightarrow -r \leq n \leq \infty \rightarrow -\frac{1}{r} \leq \frac{n}{r} + 1 \leq \frac{v}{r} \Rightarrow D_f = \left[-\frac{1}{r}, \frac{v}{r}\right]$$

$$R_{y_1} = [-1, r] \rightarrow -1 \leq f \leq r \rightarrow -\infty \leq rf - r \leq 1 \rightarrow 0 \leq |rf - r| \leq \infty$$

$$0 \leq \sqrt{|rf - r|} \leq \sqrt{\infty} \Rightarrow R_f = [0, \sqrt{\infty}]$$