

$$a = -\frac{1}{3}, (h, k) = (4, 3) \quad y = a(x-h)^2 + k \Rightarrow y = -\frac{1}{3}(x-4)^2 + 3$$

$$-\frac{1}{3}(x-4)^2 + 3 = 0 \Rightarrow (x-4)^2 = 9 \Rightarrow x-4 = \pm 3 \Rightarrow \begin{cases} x_1 = 1 \\ x_2 = 7 \end{cases} \quad \checkmark$$

$$y = a(x+1)(x-3) \xrightarrow{1} f = a(2)(-2) \Rightarrow a = -1 \Rightarrow y = -(x+1)(x-3)$$

$$\Rightarrow y = -x^2 + 2x + 3 \xrightarrow{\text{واس}} \begin{cases} \frac{-b}{2a} = 1 = \alpha \\ f = \beta \end{cases} \Rightarrow \alpha \beta = 4$$

$$\text{اس سس} \quad (1, 4) \rightarrow x+2 < 1 \rightarrow x < -\frac{1}{2}$$

$$1-2f(1) < 1-2f(4) < -7 \quad \rightarrow \quad -\frac{1}{2}x - 7 < \frac{1}{2}$$

$$y = 3 - \sqrt{2x} \xrightarrow{\text{دامد}} y = 3 - \sqrt{2(x+1)} \xrightarrow{\text{مینه نسبت به } x} y = -3 + \sqrt{2(x+1)} + 4 \Rightarrow y = 1 + \sqrt{2(x+1)}$$

$$= 1 + \sqrt{2x+2} \xrightarrow{f(x) = \frac{y}{2}} 1 + \sqrt{2x+2} = \frac{y}{2} \Rightarrow \sqrt{2x+2} = \frac{y}{2} \Rightarrow 2x+2 = \frac{y^2}{4} \Rightarrow 2x = \frac{y^2}{4} - 2 \Rightarrow x = \frac{y^2}{8} - 1 \Rightarrow \boxed{x = \frac{1}{8}}$$

$$\begin{cases} a < x-1 \leq f \Rightarrow a+1 < x \leq f \\ -1 \leq x+1 < b \Rightarrow -2 \leq x < b-1 \end{cases} \quad \left. \begin{array}{l} f(x-1) + g(x+1) \\ D_f \cap D_g \end{array} \right\} \Rightarrow a+1 = -2 \Rightarrow a = -3$$

$$b-1 = f \Rightarrow b = f+1$$

$$a-b = -3-4 = -7 \quad \checkmark$$

$$-3 \leq \frac{x}{2} + 1 \leq 5 \Rightarrow -5 \leq \frac{x}{2} \leq 8 \Rightarrow -10 \leq x \leq 16 \quad \rightarrow \quad -\frac{1}{2} \leq \frac{x}{2} + 1 \leq \frac{7}{2} \quad D_f \in [-\frac{1}{2}, \frac{7}{2}]$$

$$-1 \leq y_1 \leq 2 \rightarrow -5 \leq 2y - 4 \leq 1 \rightarrow 1 \leq 2y \leq 5 \rightarrow \frac{1}{2} \leq y \leq \frac{5}{2} \quad \rightarrow \quad \sqrt{12y-4} \leq \sqrt{5}$$

$$y_2 = \sqrt{|2f(x)-3|}$$

$$|2f(x)-3| \geq 0 \rightarrow \text{همواره برقرار}$$

$$-1 \leq f(x) \leq 2 \Rightarrow -2 \leq 2f(x) \leq 4$$

$$\Rightarrow -4 \leq 2f(x)-3 \leq 5 \Rightarrow 1 \leq |2f(x)-3| \leq 4$$

$$\Rightarrow 0 \leq \sqrt{|2f(x)-3|} \leq 2 \rightarrow \text{بر}$$

$$D_{y_2} = [-1, 1]$$

$$R_{y_2} = [0, \sqrt{5}]$$

$$[ax] = 0 \Rightarrow 0 < ax < 1 \Rightarrow 0 < x < \frac{1}{a} \checkmark \quad f(-\frac{1}{a}) = -\frac{1}{a} [-1] = \frac{1}{2} \rightarrow a = \frac{1}{2}$$

$$[ax] = 1 \Rightarrow 1 < ax < 2 \Rightarrow \frac{1}{a} < x < \frac{2}{a} \checkmark$$

$$[a-b] = 2 \Rightarrow 2 < a-b < 3 \Rightarrow \frac{2}{a} < x < \frac{3}{a} \checkmark \rightarrow \frac{2}{a} \times 2 = \frac{4}{a}$$

1.50

$$[ax] = 2 \Rightarrow 2 < ax < 3 \Rightarrow \frac{2}{a} < x < \frac{3}{a} \checkmark \rightarrow \frac{2}{a} \times 2 = \frac{4}{a}$$

نقطہ تقاطع دو خطی برعکس حالت عادی هستند

$$a = 1 \Rightarrow \frac{1}{a} = 1 \quad \leftarrow \text{از روی نمودار}$$

$$0 < x < 1 \Rightarrow [x] = 0 \Rightarrow y = 0$$

$$1 \leq x < 2 \Rightarrow [x] = 1 \Rightarrow y = x \quad b = 1 \Rightarrow a - b = 1 - 1 = 0$$

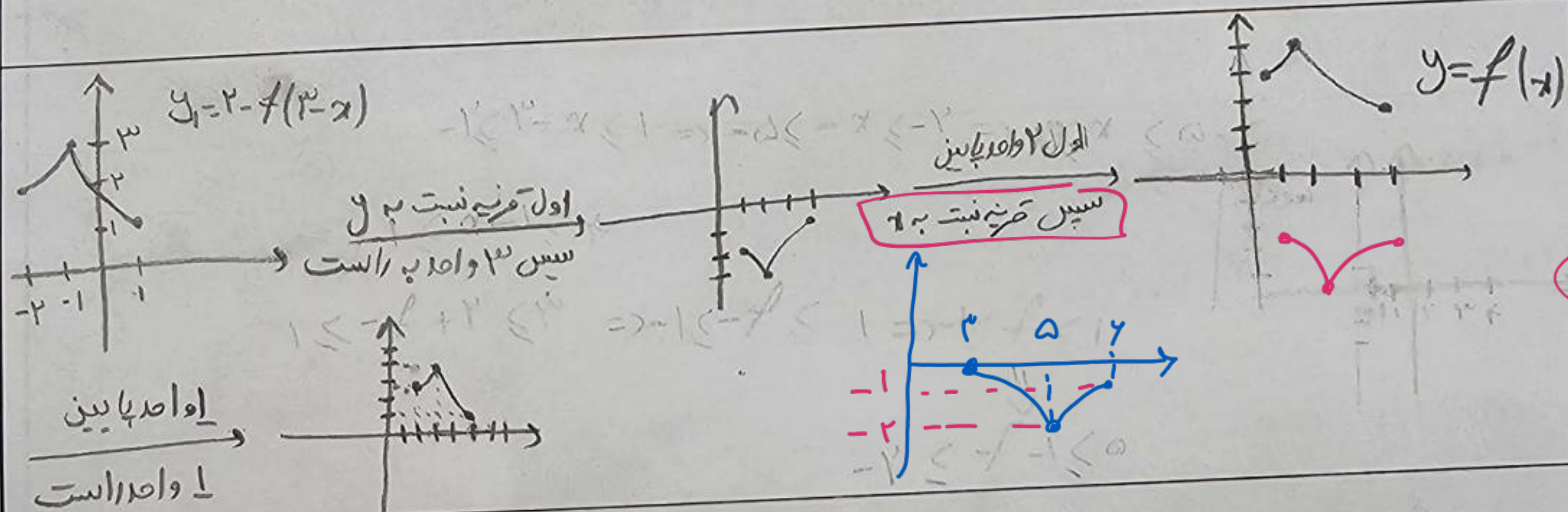
$$f(x) = \log_p x \xrightarrow{\text{اول و دوم}} \log_p (x+2) \xrightarrow{\text{سوم و چهارم}} g(x) = -\log_p (-x+2) + 3$$

$$g(-42) = -\log_p (42+2) + 3 = -4 + 3 = -1$$

$$g(-14) = -\log_p (14+2) + 3 = -2 + 3 = 1$$

$$-1 - 1 = -2$$

2



1

1.50

$$f(x) = \left| \frac{x+1}{2x+1} \right| \xrightarrow{\text{اول و دوم}} \left| \frac{x+1-2}{2(x-2)+1} \right| + 1 \Rightarrow g(x) = \left| \frac{x-1}{2x-3} \right| + 1$$

1.50

$$g(x) + x < 0 \Rightarrow \left| \frac{x-1}{2x-3} \right| < -1-x \Rightarrow -1-x > 0 \Rightarrow x < -1 \quad \text{و} \quad x \neq \frac{3}{2}$$

$$\left(\frac{x-1}{2x-3} \right) < (-x-1) \Rightarrow (x-1)(-x-1) < (-x-1)(2x-3)$$

$$-x-1 > -2x^2+3x-2x+3 \Rightarrow 2x^2-4x+2 < 0 \Rightarrow x^2-2x+1 < 0 \Rightarrow (x-1)^2 < 0 \Rightarrow x=1$$

هر دو طرف منفی هستند پس جهت معکوس

$$21f(x) - f^2(x) > 0 \Rightarrow f^2(x) - 21f(x) < 0 \Rightarrow f(x)(f(x) - 21) < 0$$

$$f(x) < 0 \text{ و } f(x) - 21 \geq 0 \quad \vee \quad f(x) > 0 \text{ و } f(x) - 21 < 0 \Rightarrow 0 \leq f(x) < 21$$

عقود

$$y = x^3 \xrightarrow{\text{نمودار}} f(x) = (x+1)^3 \quad \text{و} \quad x < 0$$

دانش آموزان 3 و 2 داده است

1

1