

$$A \begin{vmatrix} \frac{c}{r} & -\frac{b}{ra} \\ -\frac{\Delta}{ca} & -\frac{1}{r} \end{vmatrix} = \frac{-\frac{c}{ra}}{-\frac{1}{r}} = \frac{c}{a} = n_s \xrightarrow{+ \frac{3}{2}c} = c = n_A$$

$$-\frac{\Delta}{ca} = \frac{-(\frac{c}{ra} + \frac{c}{r})}{-\frac{c}{r}} = 1 \frac{1}{r} = y_s \xrightarrow{+ 1, 1 \frac{1}{r}} = r = y_A$$

$$\Rightarrow \text{معادله: } y = -\frac{1}{r} \left(x - \frac{1}{a} \right) + \frac{1}{a} \left(x - \frac{1}{a} \right) + 1 + \frac{c}{ra} = -\frac{x^2}{r} + \frac{1}{r} x - \frac{1}{r}$$

$$\Rightarrow \cancel{11x^2} x^2 - 11x + 1 = 0 \Rightarrow (x-1)(x-1) = 0 \rightarrow \begin{cases} x=1 \\ x=1 \end{cases}$$

$$\begin{cases} x=1 \rightarrow \alpha + b + c = c \\ x=-1 \rightarrow \alpha - b + c = 0 \end{cases} \Rightarrow \alpha + c = c \Rightarrow \boxed{b=c} \quad \frac{b^2}{ra} = 1 \Rightarrow \boxed{\alpha=-1}, \boxed{c=r}$$

$$\Rightarrow f(x) = -x^2 + 2x + 3$$

$$\Rightarrow y = 1 - 2 \left[-(\frac{1}{r}x + \frac{1}{r})^2 + 2(\frac{1}{r}x + \frac{1}{r}) + 3 \right] = 11x^2 + 12x - 5$$

$$\alpha = \frac{-b}{ra} = \frac{-1r}{r^2} = -\frac{1}{r}$$

$$\beta = -\frac{\Delta}{ca} = -\frac{144 + 360}{r^2} = -\frac{504}{r^2} \Rightarrow \alpha\beta = -\frac{504}{r^3}$$

$$\text{یک واحد به چپ} \rightarrow y = r - \sqrt{2(x+1)} = r - \sqrt{2x+2} \xrightarrow{\text{قرینه نسبت به محور } x} y = -r + \sqrt{2x+2}$$

$$\text{یک واحد به بالا} \rightarrow y = \sqrt{2x+2} - r + 1 = \sqrt{2x+2} + 1 = g(x) = f(x) = \frac{r}{2}$$

$$\Rightarrow \sqrt{2x+2} = \frac{r}{2} \Rightarrow 2x+2 = \frac{r^2}{4} \rightarrow 2x = \frac{r^2}{4} - 2 \rightarrow x = \frac{r^2}{8} - 1$$

$$f(x-1): D=(a+1, b) \quad g(x+1): D=[-2, b-1]$$

دامنه عبارت در صورت سوال اشتراک این دو دامنه است پس:

$$b-1=a \rightarrow b=a+1, \quad a+1=-2 \rightarrow a=-3 \Rightarrow \alpha-b=-3-(a+1)=-4-a$$

$$f\left(\frac{x}{r}+1\right): D=[-r, a] \xrightarrow{\times r+1} f(x): D=\left[-\frac{1}{r}, \frac{a}{r}\right] \quad \begin{matrix} 2f(x)-3: D=\left[-\frac{1}{r}, \frac{a}{r}\right] \\ R=[-1, 2] \end{matrix} \xrightarrow{\times 2, -3} \begin{matrix} 2f(x)-3: D=\left[-\frac{1}{r}, \frac{a}{r}\right] \\ R=[-5, 1] \end{matrix}$$

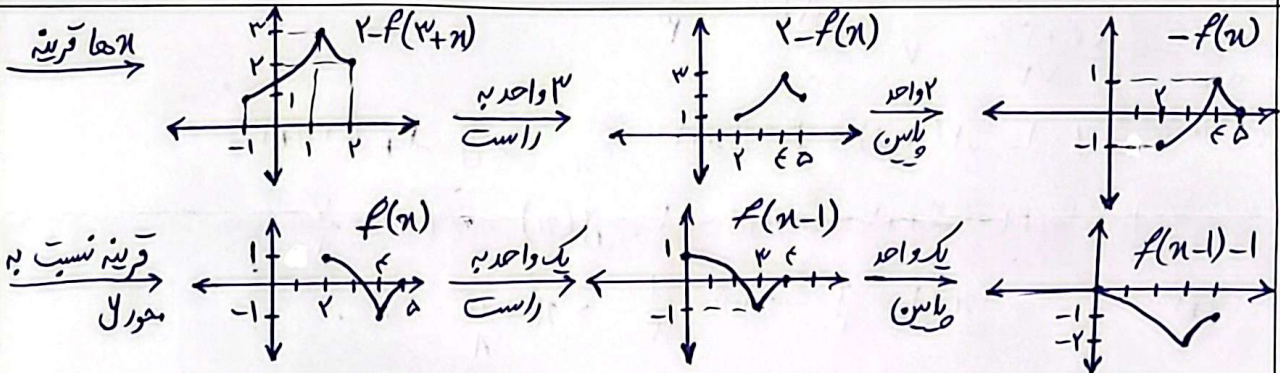
$$\xrightarrow{\text{مطلق}} |2f(x)-3|: D=\left[-\frac{1}{r}, \frac{a}{r}\right] \xrightarrow{\text{رادیکال}} \sqrt{|2f(x)-3|}: D=\left[-\frac{1}{r}, \frac{a}{r}\right] \quad \begin{matrix} R=[0, a] \\ R=[0, \sqrt{a}] \end{matrix}$$

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$$\xrightarrow{\text{۲ واحد به چپ}} y = \log_2 (x+2) \xrightarrow[\text{محور } x]{\text{قرینه نسبت به}} y = -\log_2 (x+2)$$

$$\xrightarrow{\text{۳ واحد به بالا}} y = -\log_2 (x+2) + 3 \xrightarrow[\text{محور } y]{\text{قرینه نسبت به}} y = -\log_2 (-x+2) + 3 = g(x)$$

$$\begin{aligned} \rightarrow g(4) &= -\log_2 1 + 3 = -1 \\ g(-4) &= -\log_2 6 + 3 = -3 \end{aligned} \rightarrow \text{جواب} = -1 - 3 = -4$$



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$$\xrightarrow{\text{۲ واحد به راست}} \left| \frac{(x-2)+1}{2(x-2)+1} \right| = \left| \frac{x-1}{2x-3} \right| \xrightarrow[\text{بالا}]{\text{یک واحد به}} \left| \frac{x-1}{2x-3} \right| + 1 = g(x) \rightarrow \text{حداقل مقدار } g(x) \text{ یک است}$$

$g(x) + x < 0 \rightarrow 1 + x < 0 \rightarrow \boxed{x < -1} \text{ (I)}$
 $\rightarrow \text{حال قدر مطلق را باز می کنیم} \rightarrow \text{ریشه های } \frac{3}{2} \text{ و } \frac{1}{2}$

$\text{(I)} \Rightarrow \text{فقط } x < -1 \text{ بررسی می کنیم: } g(x) = \frac{x-1}{2x-3} + 1 + x < 0 \Rightarrow \frac{2x^2-4}{2x-3} < 0$

$\frac{-\sqrt{2}}{2} < x < \frac{\sqrt{2}}{2}$
 $\xrightarrow{\text{علاوه } \frac{3}{2} \text{ و } \frac{1}{2}} \boxed{x < -\sqrt{2}}$

$$f(x) = (x-3)^3 - 21$$

$$\begin{aligned} 21f(x) &= 21(x-3)^3 - 21^2, \quad f'(x) = (x-3)^2 - 21(x-3) + 21^2 \\ &= -(x-3)^2 - 3 \times 21(x-3) - 2 \times 21^2 = \end{aligned}$$

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