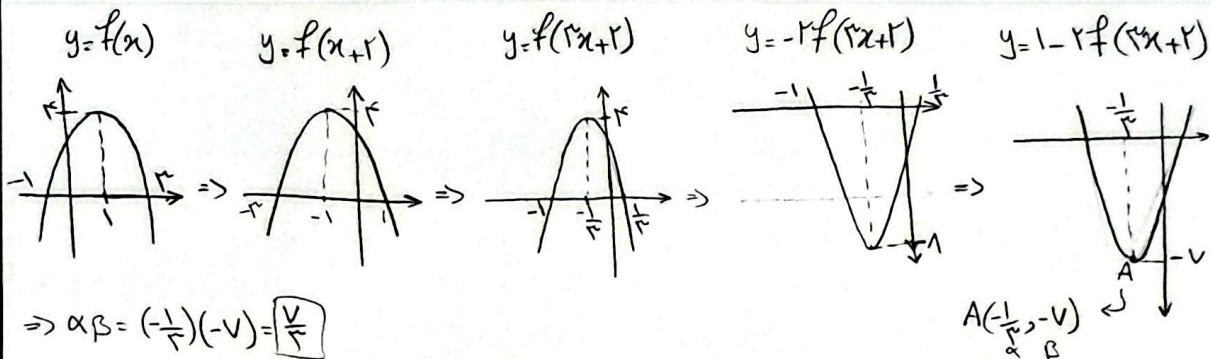


$$y = -\frac{1}{4}x^2 + \frac{1}{2}x + 1 = -\frac{1}{4}(x - x_{\text{استرم}})^2 + y_{\text{استرم}} \xrightarrow{\text{رأس مفتی}} y = -\frac{1}{4}(x-2)^2 + 2$$

$$\hookrightarrow y=0 \Rightarrow -\frac{1}{4}(x-2)^2 + 2 = 0 \Rightarrow (x-2)^2 = 8 \Rightarrow x-2 = \pm 2\sqrt{2} \Rightarrow x = 2 \pm 2\sqrt{2}$$



$$y = 2 - \sqrt{2x} \xrightarrow{\text{محل ۱}} y = 2 - \sqrt{2(x+1)} \xrightarrow{\text{محل ۲}} y = \sqrt{2(x+1)} - 2 \xrightarrow{\text{محل ۳}} y = \sqrt{2(x+1)} - 2 + 1$$

$$\Rightarrow y = \sqrt{2x+2} + 1 \Rightarrow \sqrt{2x+2} + 1 = \frac{1}{\sqrt{2}} \Rightarrow \sqrt{2x+2} = \frac{1}{\sqrt{2}} - 1 \Rightarrow 2x+2 = (\frac{1}{\sqrt{2}} - 1)^2 \Rightarrow x = \frac{1}{2}$$

$y = f(x-1) + g(x+1) \Rightarrow D = (-2, 4)$
 $D_f = (a, 4] \rightarrow f(x) \quad f(x-1)$
 $D_g = [-1, b)$
 $\hookrightarrow g(x) \quad g(x+1)$
 $D_g = [-1, b) \hookrightarrow -1 \leq x+1 < b \Rightarrow -2 \leq x < b-1 \Rightarrow D_{g(x+1)} = [-2, b-1)$
 $\Rightarrow a-b = -2-4 = -6$

$$y = \sqrt{|2f(x)-5|} \xrightarrow{\text{محل ۱}} |2f(x)-5| \xrightarrow{\text{محل ۲}} D_f = D_{f(x)}$$

$$y = f(\frac{x}{2}+1) \Rightarrow y = f(x)$$

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

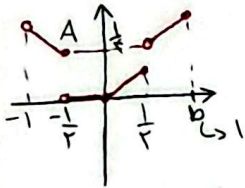
$$\hookrightarrow -2 \leq x \leq 4$$

$$-\frac{2}{2} \leq \frac{x}{2} \leq \frac{4}{2} \Rightarrow -1 \leq \frac{x}{2} \leq 2 \Rightarrow D_f = [-1, 2] \Rightarrow D_{f(x)} = [-1, 2]$$

$$y = \frac{\pi}{a} [ax] \rightarrow 0 \leq ax < 1 \Rightarrow \cancel{0 \leq x < \frac{1}{a}} \quad y = \frac{\pi}{a} [ax] \quad \Rightarrow q < 0$$

$$[ax] = 0 \quad \frac{1}{a} < x \leq 0 \Leftrightarrow y = 0$$

(bzw. $\frac{1}{a}$)



$$y = \frac{x}{-r} [-2x] \rightarrow x = -2x \Rightarrow b = 2x \frac{1}{r} = 1 \Rightarrow b - a = 1 - (-2) = 3$$

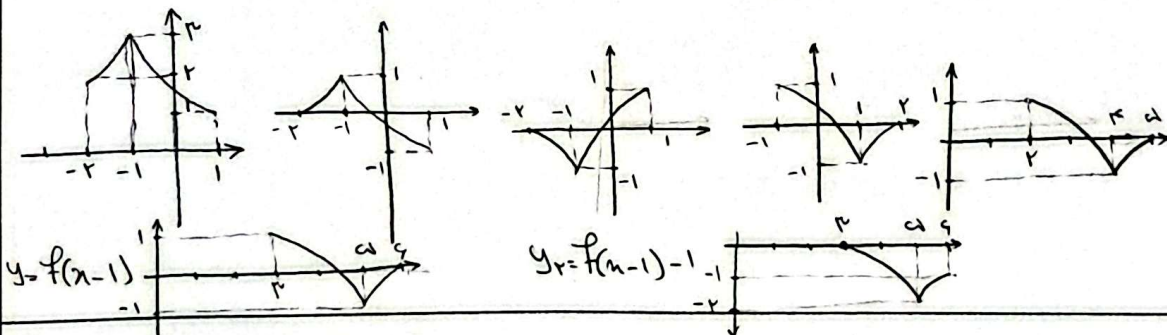
$$f(x) = -\log_r x \xrightarrow{\text{تحويل}} y = \log_r^{x+r} \xrightarrow{\text{تحويل}} y = -\log_r^{x+r} \xrightarrow{\text{تحويل}} y = -\log_r^{x+r} + r \xrightarrow{\text{تحويل}} y = -\log_r^{-x+r} + r$$

$$\Rightarrow g(x) = -\log_r^{-x+r} + r \rightarrow g(-1r) = -\log_r^{-(1r)+r} + r = -r + r = -1$$

$$\rightarrow g(-4r) = -\log_r^{-(4r)+r} + r = -4 + r = -3$$

$$\Rightarrow g(-1r) + g(-4r) = -1 - 3 = \boxed{-4}$$

$$y_1 = f(r-n) \quad y_2 = -f(r-n) \quad y_3 = f(r-n) \quad y_4 = f(r+n) \quad y_5 = f(n)$$



$$f(x) = \left| \frac{x+1}{x+1} \right| \xrightarrow[\text{مست}]{\sim \text{مولى}} f(x) = \left| \frac{(x-2)+1}{x(x-2)+1} \right| \xrightarrow[\text{نقطة}]{\sim \text{مولى}} g(x) = \left| \frac{x-1}{x^2-2} \right| + 1$$

$$x + g(x) < 0 \Rightarrow x + 1 + \left| \frac{x-1}{rx-r} \right| < 0 \Rightarrow \left| \frac{x-1}{rx-r} \right| < -(x+1) \Rightarrow \frac{x-1}{rx-r} < -(x+1) \Rightarrow \frac{rx-r}{rx-r} < 0$$

$$\Rightarrow \frac{1}{1-1} < \frac{r}{-r} \Rightarrow \frac{1}{0} < \frac{r}{-r}$$

$$\Rightarrow x+1 < \frac{x-1}{rx-r} \Rightarrow x+1 < \frac{x^2-x-1}{rx-r}$$

$$\Rightarrow x \in (-\infty, -r)$$

$$y = x^r$$

$$g(n) = \sqrt{-f'(n) + r \wedge f(n)}$$

$$L \rightarrow f(n) = (n-2)^2 + \frac{2n}{\text{بالا}}$$

$$g(n) = \sqrt{-f(n)(f_0 + r_n)}$$

$$\hookrightarrow f(x) = 0 \Rightarrow (x+2)^5 + 2V = 0 \Rightarrow (x+2)^5 = -2V \Rightarrow x+2 = -2 \Rightarrow x = -4$$

$\xrightarrow{\text{Routh}} \frac{-1}{-q + p} \rightarrow D_g = [-1, p] \rightarrow -1, 0, 1, 2, 5 = \text{poles}$