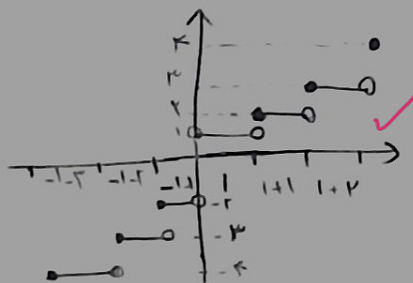


نام و نام خانوادگی: ... فرار ... ۶ ... ۱۷/۵ ...

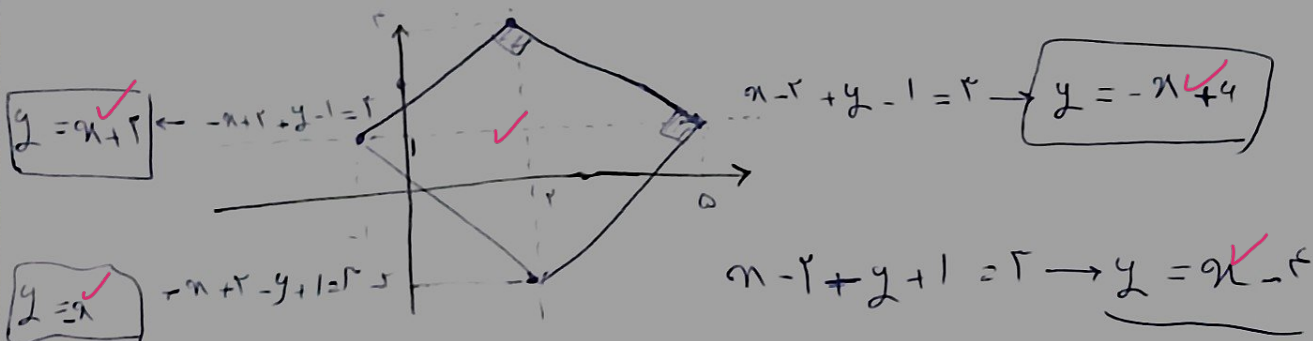
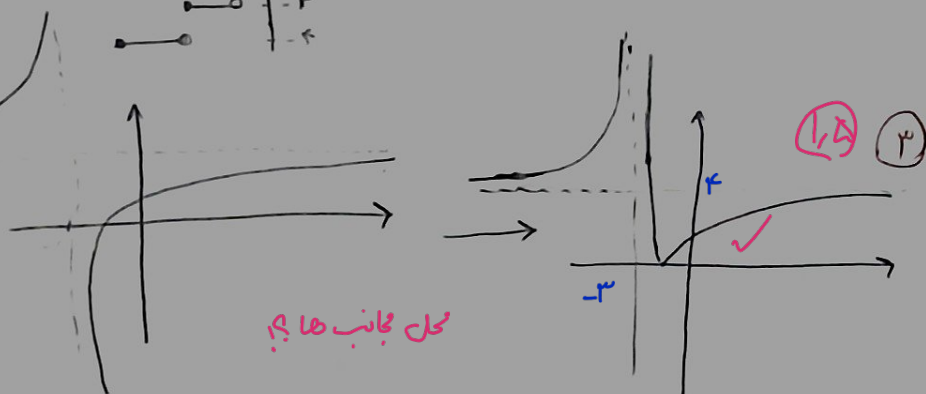
الف) $f(n) = 2 \sin^2\left(n + \frac{\pi}{4}\right) - 1$ $\xrightarrow{\sin^2=1} 2(1) - 1 = 1$ $\xrightarrow{\sin^2=0} 2(0) - 1 = -1$ $\rightarrow R_f = [1 \checkmark -1]$

ب) $g(n) = 3 \cos^2 n - 4$ $\xrightarrow{\cos^2=1} 3(1) - 4 = -1$ $\xrightarrow{\cos^2=0} 3(0) - 4 = -4$ $\rightarrow R_g = [-1 \checkmark -4]$

$$L = \frac{n}{|n|} + [n]$$



$$y = \left| \frac{4x+1}{x+3} \right|$$



الف) $f(n) = n + \frac{1}{n} + 2\sqrt{n + \frac{1}{n}} \rightarrow \left(\sqrt{n + \frac{1}{n}} + 1\right)^2 - 1$

$n + \frac{1}{n} \geq 2 \rightarrow \sqrt{n + \frac{1}{n}} \geq \sqrt{2} \rightarrow \sqrt{n + \frac{1}{n}} + 1 \geq \sqrt{2} + 1$

$\rightarrow \left(\sqrt{n + \frac{1}{n}} + 1\right)^2 \geq (\sqrt{2} + 1)^2 \rightarrow \left(\sqrt{n + \frac{1}{n}} + 1\right)^2 - 1 \geq 2 + 2\sqrt{2} + 1 - 1$

$\rightarrow R_{f_1} = [2 + 2\sqrt{2} \checkmark + \infty)$

ب) $y = (3 - \sin x)(1 + \sin x) \rightarrow -\sin^2 x + 2 \sin x + 3$

$\xrightarrow{\sin=1} -1 + 2 + 3 = 4$ $\xrightarrow{\sin=-1} -1 - 2 + 3 = 0$ $\xrightarrow{\sin=0} 0 + 0 + 3 = 3$

$\rightarrow R = [0 \checkmark 4]$

$$f(x) = -\frac{1}{r}x + 10$$

$$D_f = 1, \dots, 9$$

(2) (4)

$$\left. \begin{aligned} -\frac{1}{r}(1+2+\dots+11+9) &= -\frac{1}{r}(f(9)) = -10 \\ 9 \times 10 &= 90 \end{aligned} \right\} \rightarrow 9, -10 = \boxed{10}$$

$$f(x) = \sqrt{ax^2 + bx + c} \rightarrow D_f =]-\infty; +\infty[$$

(7)

(178)

$$\rightarrow \text{only } 0 \rightarrow a \neq 0 \rightarrow f(x) = \sqrt{bx + c}$$

$$\rightarrow \begin{cases} b(r) + c = 0 \rightarrow 2b + c = 0 \\ 3b + c = 1 \end{cases} \rightarrow b = 1, c = -2$$

$$\rightarrow \sqrt{x^2 + x} \xrightarrow{\text{كامل بنفوس}} R = [0; +\infty)$$

صفحة آخر...

$$f(x) = \frac{x^2 - x}{x + 2} \rightarrow f =]R - \{-2\}$$

(2) (1)

$$\hookrightarrow x(x-1), x \neq -2 \rightarrow R_f = [-1; +\infty) - \{-2\}$$

$$\rightarrow a, b = -1, c = 1$$

$$\rightarrow f\left(\frac{-c}{2a}\right) = f(1) = \frac{1-1}{3} = \underline{\underline{0}}$$

صفحة آخر...

$$y = \sqrt{x^2 + ax^2 + bx - 11} \rightarrow y = \sqrt{(x-2)^2} = \sqrt{x^2 - 4x^2 + 12x - 11} = x-2 \quad (2) \quad (4)$$

$$a = -4, b = 12 \rightarrow D_f = [-4; 12] \rightarrow R_f = [-1; 10]$$

$$y = [x] + \left[x + \frac{1}{r}\right]$$

(2) (10)



$\rightarrow$ مع 0, 1, 2, 3, 4

۷- با توجه به دامنه، زیر رادیکال یک خط با شیب مثبت بوده یعنی $a=0$ است و نقطه $(2,0)$ هم در معادله خط صدق می‌کند...

$$\begin{cases} (2,0) \rightarrow 2b+c=0 \\ (3,1) \rightarrow 3b+c=1 \end{cases} \rightarrow b=1, c=-2$$

$$g(x) = \sqrt{x^2+4} \rightarrow \text{ext} \Big|_4^0 \Rightarrow R_g = \sqrt{[4, +\infty)} = [2, +\infty)$$

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

۸-

$$x^2 - 2x \neq 8 \rightarrow \begin{cases} x \neq -2 \\ x \neq 4 \end{cases}$$

$y=8$ در برد تابع نیست یعنی:

$$D_f = \mathbb{R} - \{-2, 4\}$$

پس دامنه برابر است با:

$$f(x) = x^2 - 2x \rightarrow \text{ext} \Big|_{-1}^1 \Rightarrow R_f = [-1, +\infty) - \{8\}$$

حالا بیایم سریع برد را:

$$f\left(\frac{a+b}{2c}\right) = f\left(\frac{2}{-2}\right) = f(-1) \rightarrow f(-1) = 3$$