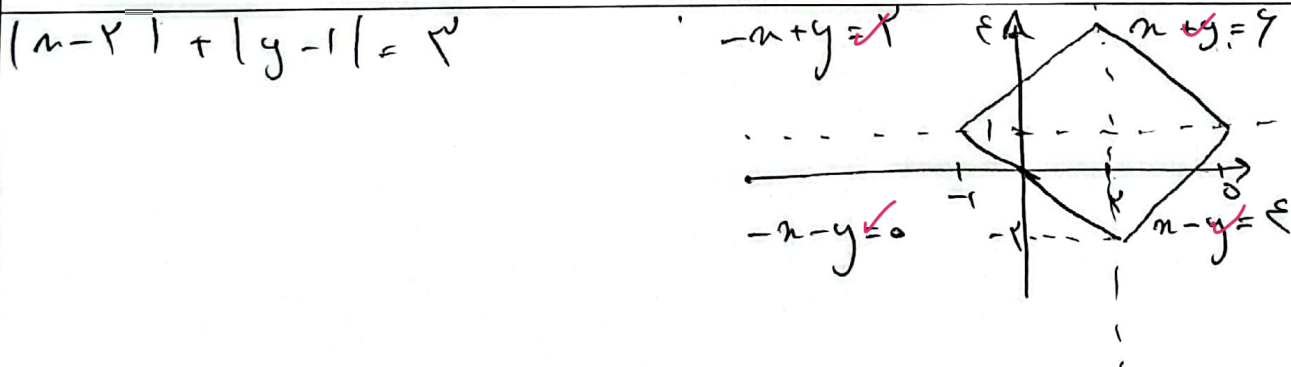
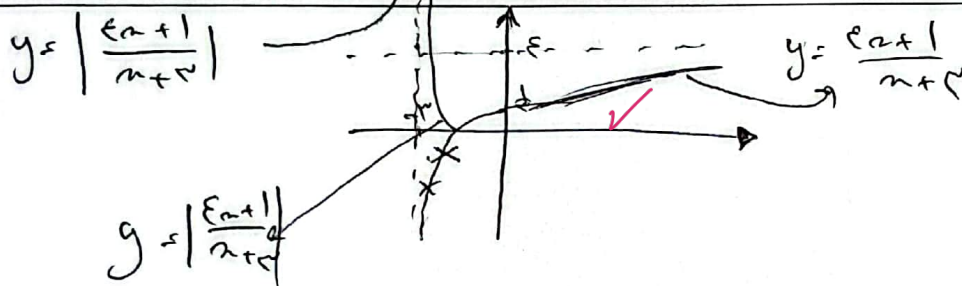
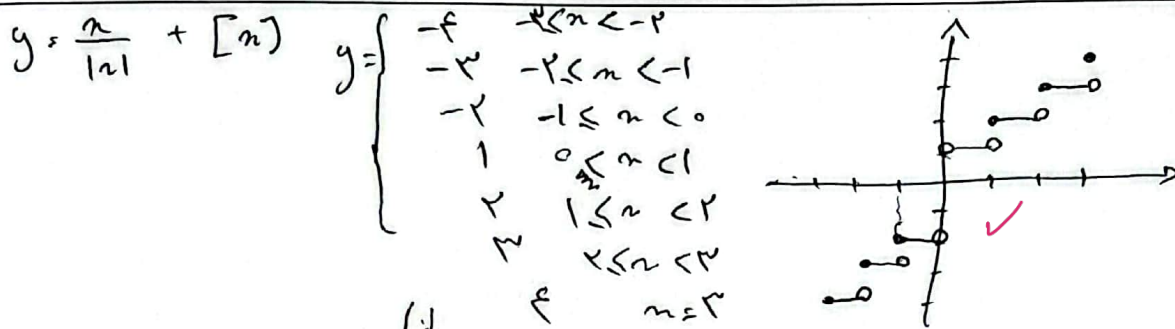


الف) $f(n) = 2 \sin^2 \left(n + \frac{\pi}{3} \right) - 1$ $\left\{ \begin{array}{l} 0 \leq \sin^2 t \leq 1 \Rightarrow -1 \leq 2 \sin^2 t - 1 \leq 1 \\ \Rightarrow -1 \leq f(n) \leq 1 \end{array} \right.$ (۲)

ب) $g(n) = 3 \cos^2 n - 4$ $-1 \leq \cos^2 n \leq 1 \Rightarrow 3 \cos^2 n - 4 \in [-1, 5]$ (۱)



الف) $f(n) = n + \frac{1}{n} + 2\sqrt{n + \frac{1}{n}}$ $\frac{b}{a} = -1$ $n + \frac{1}{n} \neq -1$ $n + \frac{1}{n} \geq 0 \Rightarrow n + \frac{1}{n} \geq 2$ (۱.۵)

$\Rightarrow \mathbb{R}_f: [2 + 2\sqrt{2}, +\infty)$

ب) $y = (3 - \sin n)(1 + \sin n) = -\sin^2 n + 2\sin n + 3$ $\frac{b}{a} = \frac{2}{-1} = -2$ $\sin n = 1$ ✓

$\sin n = 1 \Rightarrow -1 + 2 + 3 = 4$

$\sin n = -1 \Rightarrow -1 - 2 + 3 = 0$ $\Rightarrow \mathbb{R}_y: [0, 4]$

وقت!

$\frac{b}{a}$

صفحه آخر...

$$f(n) = -\frac{1}{n}n + 1. \quad D_f: \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

$$f(9) = 9 \times 1 + \left(\frac{-1}{9} \right) \left(\frac{9 \times 9}{9} \right) = 9 - 1 = 8$$

$$f(n) = \sqrt{an^2 + bn + c} \quad D_f: [1, +\infty) \quad f(1) = 1$$

$$a = 0 \quad bn + c \quad bn + c \geq 0 \quad \frac{c}{b} \leq n \quad \frac{c}{b} = 1 \Rightarrow f(n) = \sqrt{bn - 1}$$

$$f(1) = \sqrt{1b - 1} = \sqrt{b - 1} = 1 \Rightarrow b = 2 \quad g(n) = \sqrt{n^2 + 1}$$

$$n^2 - 1 \geq -1 \Rightarrow R_g: [0, +\infty)$$

$$f(n) = \frac{n^2 - 1}{n + 1} \quad D_f: \mathbb{R} - \{-1\} \quad R_f: [1, +\infty) - \{1\}$$

$$f\left(\frac{a+b}{2}\right) = ? \quad n \neq -1 \Rightarrow f(n) = \frac{n(n+1)(n-1)}{n+1} = n^2 - 1$$

$$f\left(\frac{1}{-1}\right) = f(-1) = 1 - 1 = 0$$

$$y = \sqrt{n^3 + an^2 + bn - 1} \quad D_g: [-1, 1] \quad y = \sqrt{(n-1)^2} = n-1$$

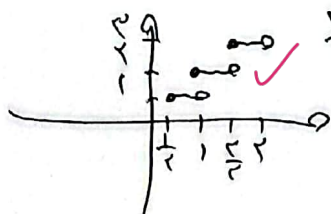
$$-1 - 1 = -2 \quad 1 - 1 = 0 \quad R_g: [-2, 0]$$

$$y = [n] + \left[n + \frac{1}{n}\right] \quad \frac{1}{n} < 1$$

$$[n] = 0 \quad \left[n + \frac{1}{n}\right] = 1 \quad y = 1$$

$$[n] = 1 \quad \left[n + \frac{1}{n}\right] = 1 \quad y = 2$$

$$[n] = 1 \quad \left[n + \frac{1}{n}\right] = 2 \quad y = 3$$



$$y = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10$$

$$ج) y = (3 - \sin u)(1 + \sin u) = -\sin^2 u + \boxed{2\sin u} + 3$$

$$\begin{cases} \sin u = -1 \rightarrow y = 0 \\ \sin u = 1 \rightarrow y = 4 \\ \sin u = \frac{-b}{r_u} = 1 \rightarrow y = 4 \end{cases} \Rightarrow R_f = [0, 4]$$

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...

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

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