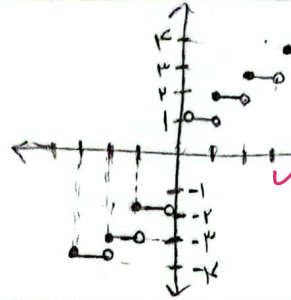


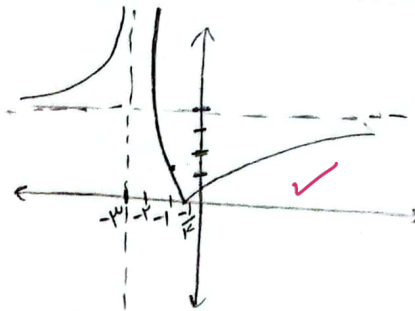
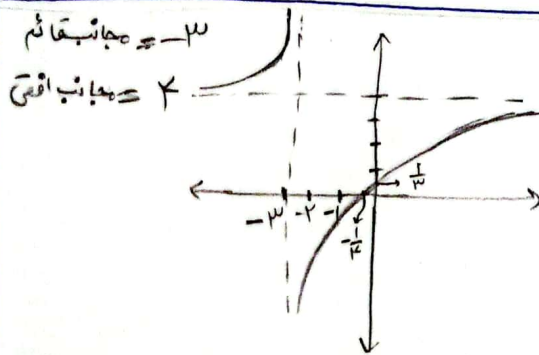
الف) $-1 \leq \sin\left(x + \frac{\pi}{4}\right) \leq 1 \xrightarrow{\text{توان}} 0 \leq \sin^2\left(x + \frac{\pi}{4}\right) \leq 1 \xrightarrow{\times 2} 0 \leq 2\sin^2\left(x + \frac{\pi}{4}\right) \leq 2 \xrightarrow{-1} -1 \leq 2\sin^2\left(x + \frac{\pi}{4}\right) - 1 \leq 1 \Rightarrow R = [-1, 1]$ (2)

ب) $-1 \leq \cos x \leq 1 \xrightarrow{\text{توان}} -1 \leq \cos^3 x \leq 1 \xrightarrow{\times 3} -3 \leq 3\cos^3 x \leq 3 \xrightarrow{-4} -7 \leq 3\cos^3 x - 4 \leq -1$
 $R = [-7, -1]$

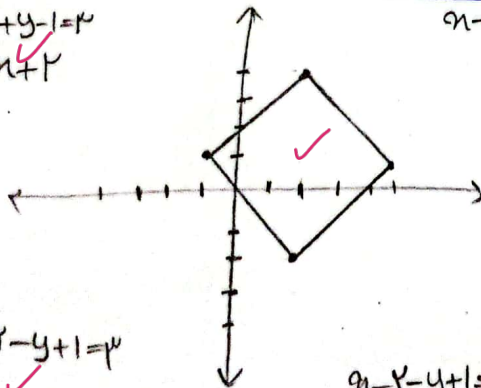
$-3 \leq x \leq 0 \rightarrow -1 + [x]$
 $0 < x \leq 3 \rightarrow 1 + [x]$



$R = [-2, -1) \cup (1, 2]$



$-x + y - 1 = 3$
 $y = x + 4$



$x - y + 1 = 3$
 $y = x - 2$

$-x + y - 1 = 3$
 $y = x + 4$

$x - y + 1 = 3$
 $y = x - 2$

الف) $x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}} + 1 - 1 = (\sqrt{x + \frac{1}{x}} + 1)^2 - 1 \xrightarrow{x \geq 0} \sqrt{x + \frac{1}{x}} \geq 0 \Rightarrow [2, +\infty) \xrightarrow{+1} [\sqrt{2} + 1, +\infty) \xrightarrow{\text{توان}} [3 + 2\sqrt{2}, +\infty) \xrightarrow{-1} [2 + 2\sqrt{2}, +\infty) = R$ (2)

ب) $-\sin^2 x + 2\sin x + 3 = y$

$\sin x = 1 \rightarrow -1 + 2 + 3 = 4$

$\sin x = -1 \rightarrow -1 - 2 + 3 = 0 \Rightarrow R = [0, 4]$

$\sin x = \frac{1}{2} \rightarrow 1$

$$D_f = \{1, 2, 3, 4, 5, 6, 7, 8, 9\} \Rightarrow R_f = \left\{ \frac{29}{3}, \frac{28}{3}, \frac{27}{3}, \frac{26}{3}, \frac{25}{3}, \frac{24}{3}, \frac{23}{3}, \frac{22}{3}, \frac{21}{3} \right\} \quad \text{---c}$$

$$\sum_{i=1}^9 \frac{29+28+27+26+25+24+23+22+21}{9} = \frac{225}{9} = 25 \quad \checkmark$$

مردن منفرجه فقط
سکات رشتی دارد
بسی $\Rightarrow a = 0 \leq -2$

$$\frac{n^3 - 4n}{n+2} = \frac{n(n-2)(n+2)}{n+2} = n^2 - 4n \quad n = -2, 1$$

↓
الکتریم $\left| \begin{matrix} -\frac{b}{2a} \\ 1-2 = -1 \end{matrix} \right|$

من این دو سوال
رو جوابی
نرستم حتی
اول و بعد
رو نوشتم
صفحه آخر...

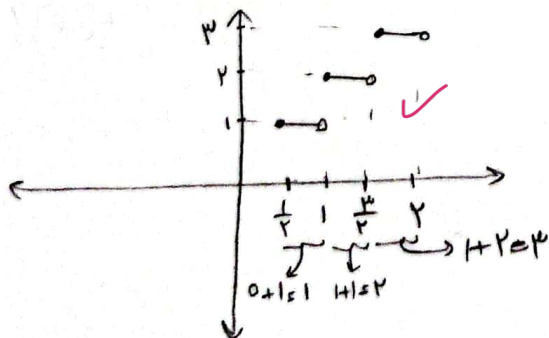
$$R = [2, +\infty) - \{1\} \Rightarrow [-4, +\infty) - \{1\}$$

$$f\left(\frac{a+b}{2c}\right) = f\left(-\frac{4}{2}\right) = f(-2) \quad \checkmark$$

سری شیت بس فقط
چون از یک عدد بزرگتر
 $\rightarrow a^2n + b = a^2n^2 + b^2n + c \Rightarrow b^2n + c \Rightarrow \begin{cases} 2b + c = 0 \\ 3b + c = 1 \end{cases} \Rightarrow b = 1, c = -2$

حالا: $\sqrt{b^2n^2 + a^2n - 2c} = \sqrt{n^2 + 4n - 4} \rightarrow [4, +\infty) \xrightarrow{\text{جزی}} R = [2, +\infty)$

از روی $n^3 - 4n^2 + 12n - 1 = n^3 + an^2 + bn - 1$
تابع خطی $\begin{cases} a = -4 \\ b = 12 \end{cases} \Rightarrow D_f = [-4, 12] \xrightarrow{\text{در نهایت}} R = [-1, 10]$



$\boxed{14}$

(2) -10

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

-۸

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

۸=۹ در برد مایع نیست یعنی:

پس دافند برابر است با: $D_f = \mathbb{R} - \{-2, 4\}$

$$f(x) = x^2 - 2x \rightarrow \lim_{x \rightarrow -1} \Rightarrow R_f = [-1, +\infty) - \{8\}$$

حالا بیایم سراغ برد:

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