

٢٠ آفرین:

مجموعه معبر و

$$\begin{aligned}
 n \Rightarrow f(-n) - n f(n) &\leq 2|n| + 1 \times n \Rightarrow n f(-n) - n^2 f(n) \\
 -n \Rightarrow f(n) + n f(-n) &\leq 2|-n| + 1 \\
 n^2 f(n) + f(n) &= 2|-n| + 1 - 2|n|n - n \\
 f(n)(n^2 + 1) &= 2|-n| - 2|n|n + 1 - n f(n) = 2|-n| - 2|n|n + 1 - n
 \end{aligned}$$

سوال ٢١

$$\begin{cases}
 u_1 = \frac{-2n^2 + 2n + 1}{n^2 + 1} \\
 f(n) = \frac{2n^2 - 2n + 1}{n^2 + 1}
 \end{cases}$$

سوال ٢٢

$$\begin{aligned}
 x=0 \Rightarrow 2f(0) &\leq 9 \Rightarrow f(0) \leq \frac{9}{2} \Rightarrow f(x) \leq n^2 + 3n + \frac{9}{2} \\
 \Rightarrow f(x^2) &= n^2 - 3n + \frac{9}{2}
 \end{aligned}$$

سوال ٢٣

$$\begin{aligned}
 yx - y &= n^2 + n + 2 \Rightarrow x^2 + (y-1)x + 2 + y \\
 \Rightarrow x &= \frac{-1+y \pm \sqrt{1+y^2-2y-1-4y}}{2} \Rightarrow \sqrt{y^2-4y-2} \Rightarrow \geq 0 \quad (y-2)(y+1) \\
 \Rightarrow R &= (-\infty, -1] \cup [2, +\infty)
 \end{aligned}$$

سوال ٢٤

$$\begin{aligned}
 \text{الف) } \min &\Rightarrow x \leq \frac{\infty}{f} \\
 y &= \frac{12}{n} - \frac{22}{f} + 1 \leq \frac{-12}{n} + 1 \leq \frac{-12}{18} \Rightarrow R \leq \left[-\frac{12}{18}, +\infty\right) \\
 \text{ب) } \sqrt{-(n^2-9n+20)} &\Rightarrow \max \begin{cases} x \leq 4 \\ y \leq -9+11-20 \leq f \end{cases} \Rightarrow \sqrt{(-\infty, 4)} = [0, 4]
 \end{aligned}$$

ج) $\leq [0, +\infty)$ (در دایره اول و دوم)

د) $\log_{10} x = ?$ $\odot \checkmark$



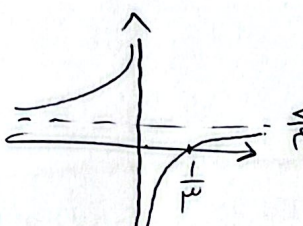
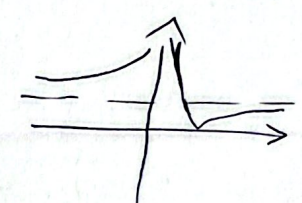
سوال ٢٥

$$\begin{aligned}
 \text{الف) } R &= \left\{ \frac{f}{f} \right\} \quad \text{ب) } \sqrt{R-f^2} \Rightarrow [0, \infty) - \{f\} \\
 \text{ج) } \sqrt{a^2+4} + \frac{1}{\sqrt{a^2+4}} &= a + \frac{1}{a} \rightarrow a \geq \sqrt{2} \quad \sqrt{2} + \frac{1}{\sqrt{2}} = \frac{2+1}{\sqrt{2}} = \frac{3}{\sqrt{2}} \\
 \left[\frac{f}{\sqrt{2}} \leq \frac{f\sqrt{2}}{2} + \infty \right]
 \end{aligned}$$

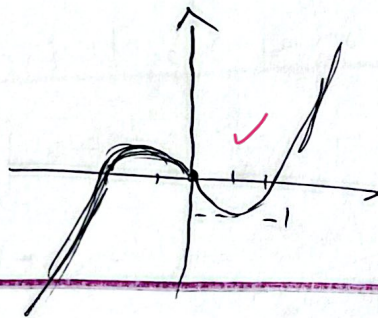
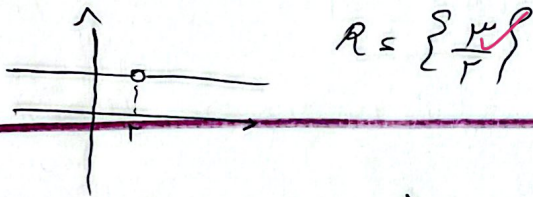
سوال ٢٦

$$\begin{aligned}
 \text{د) } a^2 + 4 + \frac{1}{a^2 + 4} &\Rightarrow \left[\frac{1}{f} + \infty \right) \\
 -\frac{a^2 - 4}{a^2 + 4} &= \frac{a^2 + 4}{a^2 + 4} \leq n^2 \quad (1) \\
 \frac{a^2 - 4}{a^2 + 4} &\Rightarrow +1 - \frac{8}{a^2 + 4} \quad (-\infty, 4] \cup [4, +\infty) \\
 \Rightarrow &(-\infty, -4] \cup [4, +\infty)
 \end{aligned}$$

$\max \leq 1 \Rightarrow \frac{q}{-r} \leq 3 \quad \min = \frac{+r}{-q} \leq -\frac{1}{r} \quad (2) \text{ (سوال 1)}$
 $\Rightarrow \left[-\frac{3}{r}, -\frac{1}{r} \right] \quad [-\infty, -\frac{1}{r}]$

$\frac{r_n - 1}{r_n} \Rightarrow$  $\Rightarrow$  $\mathbb{R} \subset [0, +\infty)$ (2)

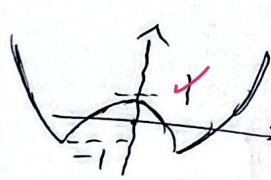
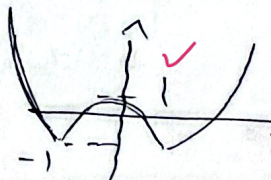
$\lim_{n \rightarrow \infty} \frac{q_n - 1}{r_n - 1} \leq \sqrt{\frac{q}{r}} \leq \frac{q}{r}$



$n_0 = m^r - r_m \quad (2) \text{ (سوال 4)}$

$n_1 < -n^r - r_m$
 $-(n^r + r_m)$
 $n(n^r)$

$\mathbb{R} \subset \mathbb{R}$

$f(x) + 1 \Rightarrow$  $\Rightarrow$  $\Rightarrow$ (2) (سوال 10)

