

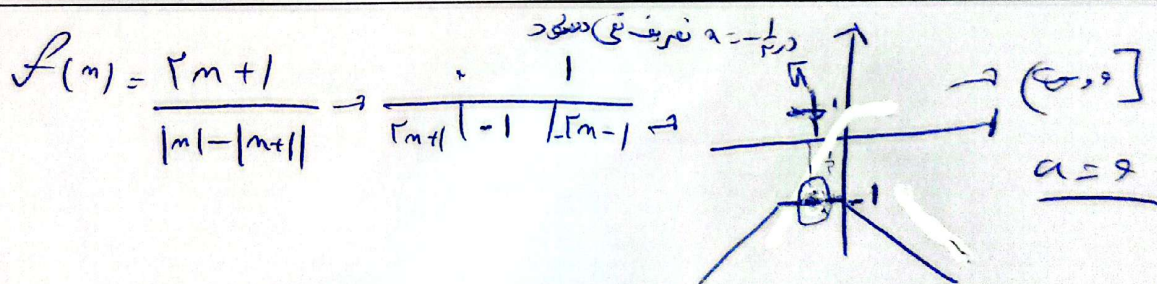
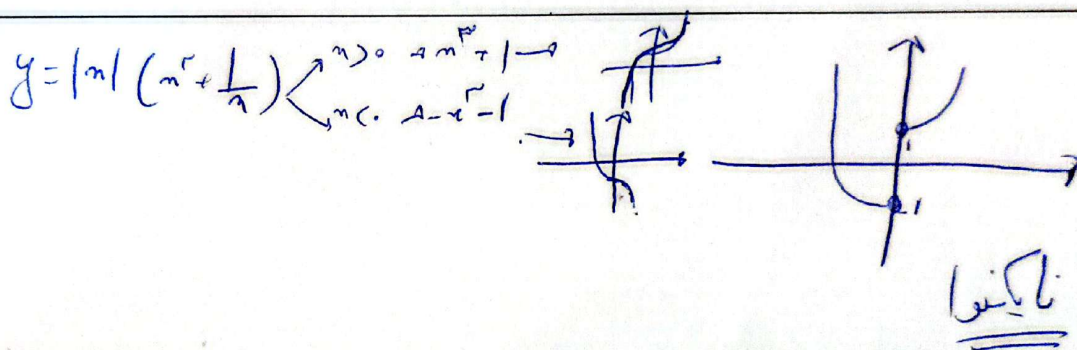
نام و نام خانوادگی: آید اصفهانی پاسخنامه تشریحی تکلیف شماره ۹ کلاس B

$$f(n+2) = \begin{cases} 3n+5 & n \geq 1 \\ 2n-1 & n < 1 \end{cases} \rightarrow f(n) = \begin{cases} 3n-1 & n \geq 1 \\ 2n-9 & n < 1 \end{cases} \quad \text{آید اصفهانی}$$

$$y = \sqrt{f(2n) - f(n+1)} \rightarrow f(2n) > f(n+1) \rightarrow 3-2n > n+1 \quad \underline{n \leq 1}$$

$$f(n) = (n^2 + n)^3 \rightarrow \text{صعودی آید}$$

$$f_0 f(n) < f(n^2) \rightarrow f(n) < n^2 \rightarrow (n^2 + n)^3 < n^2 \rightarrow n^2 + n < n^2 \rightarrow n < 0 \rightarrow \underline{n \leq 0}$$



$$y = \log_{\frac{1}{2}}(n^2 - 2n - 1) \rightarrow y = \log_{\frac{1}{2}} \frac{1}{n^2 - 2n - 1} \rightarrow n^2 - 2n - 1 \rightarrow \frac{-2}{1} = \frac{1}{1}$$

چون توابع زوج و فرد باید به هم مرتبط باشند یعنی بازه
(۲- و ۳)

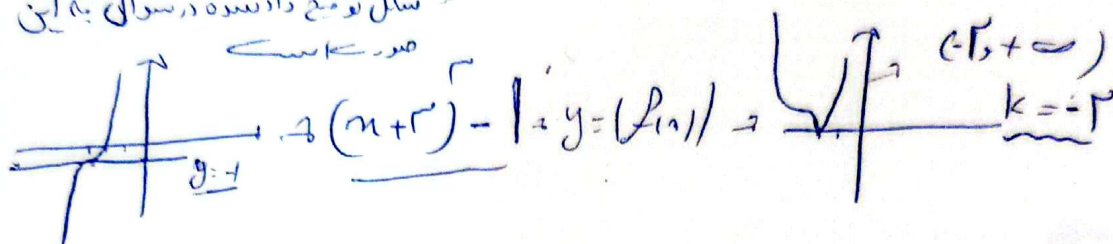
$$f(m) = (a^2 - 3)^n$$

$$\text{و) } a^2 - 3 > 1 \rightarrow a^2 > 4 \rightarrow a > 2 \text{ یا } a < -2$$

$$\text{و) } a^2 - 3 \geq 1 \rightarrow a^2 \geq 4 \rightarrow a \geq 2 \text{ یا } a \leq -2$$

$$a^2 - 3 = 0 \rightarrow a^2 = 3 \rightarrow a = \pm\sqrt{3} \quad a \in (-\infty, -2] \cup [2, +\infty) \cup \{\pm\sqrt{3}\}$$

شکل توابع دایره‌ای سوال ۵ این



$$f(m) = \frac{m + \sqrt{m}}{2} - 2 \quad \text{for } m \in \mathbb{R} \rightarrow f(m) \leq \sqrt{m} \rightarrow m + \sqrt{m} - 2 \leq \sqrt{m}$$

$$m \in D_f \rightarrow f(m) \in D_{f(m)} \quad m \geq 0 \quad m + \sqrt{m} - 2 \geq 0 \rightarrow (m + \sqrt{m} - 2) \geq 0 \rightarrow \frac{m + \sqrt{m} - 2}{m + \sqrt{m} - 2} \geq 0 \rightarrow \frac{m + \sqrt{m} - 2}{m + \sqrt{m} - 2} \geq 0 \rightarrow \frac{m + \sqrt{m} - 2}{m + \sqrt{m} - 2} \geq 0$$

$$\sqrt{9 \cos^2 m - 1} = t \rightarrow \cos^2 m = 0 \rightarrow t = \sqrt{-1} = -1$$

$$f(m) = \frac{\sqrt{9 \cos^2 m - 1}}{2} - \frac{\sqrt{1 - 9 \cos^2 m}}{2} = \frac{t}{2} - \frac{\sqrt{1 - 9 \cos^2 m}}{2} = \frac{t}{2} - \frac{1}{2} \sqrt{1 - 9 \cos^2 m}$$

$$R_f = \left[-\frac{1}{2}, \frac{10}{2} \right] \quad \frac{10}{2} - \left(-\frac{1}{2} \right) = \frac{11}{2}$$

$$f(m) = m - [m] - 2 \rightarrow m - [m] \leq 1 \rightarrow -1 \leq f(m) \leq -1$$

$$g \circ f(m) = \frac{f(m)}{2} - f(m) \rightarrow \begin{cases} f(m) = -1 \rightarrow \frac{-1}{2} - (-1) = \frac{1}{2} \\ f(m) = -2 \rightarrow \frac{-2}{2} - (-2) = \frac{3}{2} \end{cases}$$

$$R_{g \circ f} = \left[-\frac{1}{2}, \frac{3}{2} \right]$$