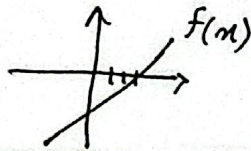
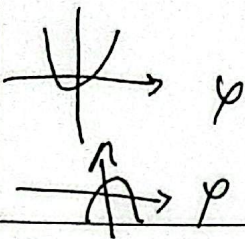


$D_f = [3, +\infty) \rightarrow$ این تابع به دلیل ظاهر افق به $a=2$ درجه یک (خطی) است $\Rightarrow a-2 \geq 0 \Rightarrow a=2$



$y = \sqrt{ax+b} \Rightarrow y = \sqrt{2x+b}$

$y = 2x+b = 0 \Rightarrow b = -2$

$D_f = \mathbb{R} \Rightarrow \Delta < 0, a > 0 \Rightarrow$

$\sqrt{x^2 + 2x + 2 - m^2} \geq 0 \Rightarrow \Delta < 0 \Rightarrow$

اینجا کویکوتی

$\epsilon - 1 + m^2 < 0 \Rightarrow -\epsilon + m^2 < 0$

$m^2 < \epsilon \Rightarrow m < \sqrt{\epsilon}$

$m \in (-\sqrt{\epsilon}, \sqrt{\epsilon})$

$f(x) = \frac{\sqrt{\epsilon - x^2}}{[x] + [-x] + 1} \rightarrow \epsilon - x^2 \geq 0 \Rightarrow \epsilon \geq x^2 \Rightarrow x \in [-\sqrt{\epsilon}, \sqrt{\epsilon}]$

$[x] + [-x] = 0 + 1 \rightarrow$ همواره 1 است

$D_f = [-\sqrt{\epsilon}, \sqrt{\epsilon}]$

نقطه دامنه می شود پس می باشد

$y = \sqrt{x^2 + 3x} \Rightarrow x^2 + 3x \geq 0 \Rightarrow x(x+3) \geq 0$

$x \in [-3, +\infty)$

$D_y = (-\infty, 3] \cup [0, +\infty)$

$y = \sqrt{\frac{(x^2-1)(x^2-3x)}{x^2-1}} \Rightarrow x^2-1 \rightarrow x=1, -1$

$x^2-3x = x^2(x-3) \rightarrow x=0, 3$

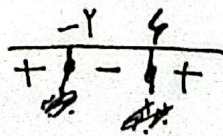
$x^2-1 \geq 0 \Rightarrow x \geq 1$

$D_y = (-\infty, 1] \cup [3, +\infty)$

$y = \sqrt{|x-2| - 3} \Rightarrow |x-2| - 3 \geq 0 \Rightarrow |x-2| \geq 3 \Rightarrow -1 \geq x \geq 5$

$D_y = [-1, 5]$

$y = \sqrt{\epsilon - |y-x|} \Rightarrow \epsilon - |y-x| \geq 0 \Rightarrow |y-x| \leq \epsilon \Rightarrow$



$D_y = (-\infty, 2] \cup [4, +\infty)$

$$y = \sqrt{1-x|x|} \Rightarrow 1-x|x| \geq 0 \Rightarrow 1 \geq x|x| \Rightarrow \boxed{x \leq 1}$$

$$D_y = (-\infty, 1]$$

$$y = \frac{1}{\sqrt{3-|x-1|-1}} \Rightarrow \sqrt{3-|x-1|-1} > 0 \Rightarrow 2 > |x-1| \Rightarrow x > 1 \Rightarrow \boxed{D_y = (3, \infty)}$$

$$y = \frac{x^{1/2}x-1}{\cos x} \Rightarrow \cos x \neq 0 \Rightarrow D_y = \mathbb{R} - \left\{K\pi + \frac{\pi}{2}\right\}$$

$$y = \frac{\cos x}{x \cos x - 1} \Rightarrow x \cos x - 1 \neq 0 \Rightarrow x \cos x \neq 1 \Rightarrow \cos x \neq \frac{1}{x} \Rightarrow D_y = \mathbb{R} - \left\{K\pi + \frac{\pi}{2}, K\pi + \frac{\omega \pi}{x}\right\}$$

$$a) y = \frac{x^2}{|x+1|-|x+2|} \Rightarrow |x+1| = |x+2| \Rightarrow x+1 = x+2 \Rightarrow x = 1 \Rightarrow D_y = \mathbb{R} - \{1\}$$

$$b) \sqrt{|x+1|-|x+2|} \Rightarrow |x+1| \geq |x+2| \Rightarrow x+1 \geq x+2 \Rightarrow x \leq -1 \Rightarrow \boxed{x \leq -1}$$

$$f(x) = \sqrt{\log_{0.5} \log_{0.5} (x-1)} \Rightarrow x-1 > 0 \Rightarrow x > 1 \Rightarrow D_f = (1, \infty)$$

$$a) y = \log(x \cos x + 1) \Rightarrow x \cos x + 1 > 0 \Rightarrow x \cos x > -1 \Rightarrow \cos x > -\frac{1}{x} \Rightarrow D_y = \mathbb{R} - \left\{K\pi - \frac{\pi}{2}, K\pi + \frac{\pi}{2}\right\}$$

$$b) y = \sqrt{\log \frac{x-1}{x+1}} \Rightarrow \log \frac{x-1}{x+1} \geq 0 \Rightarrow \frac{x-1}{x+1} \geq 1 \Rightarrow x-1 \geq x+1 \Rightarrow x \leq -1$$

$$\frac{x-1}{x+1} \geq 0 \Rightarrow x \leq -1 \text{ or } x > 1 \Rightarrow \boxed{x \leq -1 \text{ or } x > 1}$$

(۲) چون دامنه تابع R است پس عبارت زیر را می‌توانیم جایگزین کنیم (بارشده می‌توانیم به مخرج یا بدون ریشه)

مواقعیت (سهی min دار است چون ضریب n^2 می‌باشد)

$$\Delta \leq 0 \rightarrow (2)^2 - 4(2 - n^2) \leq 0 \rightarrow 4 - 8 + 4n^2 \leq 0 \rightarrow 4n^2 \leq 4 \rightarrow n^2 \leq 1$$

$$-1 \leq n \leq 1 \rightarrow \min(n) = -1 \rightarrow \max(n) - \min(n) = 1 - (-1) = 2$$

$\hookrightarrow \max(n) = -1$

(۳) عبارت مخرج باید مضاف باشد!

$$x \in \mathbb{Z} = [n] + [-n] + 1 = 1 \quad \checkmark$$

$$[n] + [-n] + 1$$

$$x \notin \mathbb{Z} = [n] + [-n] + 1 = 0 \quad \times$$

$$\rightarrow x \in \mathbb{Z}$$

$$4 - n^2 \geq 0 \rightarrow n^2 \leq 4 \rightarrow -2 \leq n \leq 2$$

عبارت زیر را می‌توانیم جایگزین کنیم!

$$\hookrightarrow D_f = \{-2, -1, 0, 1, 2\}$$

دامنه شامل ۵ عدد صحیح است!

۴- الف) $n^3 + 3n^2 \geq 0 \rightarrow n^2(n+3) \geq 0 \rightarrow \frac{-3}{-} \quad \frac{0}{+} \quad \frac{0}{+}$ $\rightarrow D_f = [-3, +\infty)$

۴- ب) $\frac{(n^2-1)(n^3-3n^2)}{(n^2-1)} \geq 0 \rightarrow \frac{(n-1)(n+1)(n^2)(n-3)}{(n-1)(n^2+n+1)} \geq 0$ $\frac{-1}{+} \quad \frac{0}{-} \quad \frac{0}{-} \quad \frac{3}{+}$

$D_f = (-\infty, -1] \cup \{0\} \cup [3, +\infty)$ $\Delta < 0$ ریشه ندارد

۴- ب) $3 - |n-5| \geq 0 \rightarrow |n-5| \leq 3 \rightarrow -3 \leq n-5 \leq 3 \rightarrow 2 \leq n \leq 8$

$$\sqrt{3 - |n-5|} - 1 \neq 0 \rightarrow \sqrt{3 - |n-5|} \neq 1 \rightarrow 3 - |n-5| \neq 2 \rightarrow |n-5| \neq 2 \rightarrow n \neq 7, 3$$

$$D_f = [2, 8] - \{3, 7\} = [2, 3) \cup (3, 7) \cup (7, 8]$$

$$٨ - \text{الف}) |x_{n+1}| - |n+3| = 0 \rightarrow |x_{n+1}| = |n+3| \xrightarrow{\text{توازن}} x_n^2 + x_{n+1} = n^2 + 4n + 9$$

$$\rightarrow x_n^2 - x_n - 8 = 0 \rightarrow n^2 - x_n - 22 = 0 \rightarrow (n-4)(n+6) = 0 \quad \begin{matrix} \rightarrow n = \frac{4}{1} = 4 \\ \rightarrow n = -\frac{6}{1} = -6 \end{matrix} \rightarrow D_f = \mathbb{R} - \left\{ -\frac{4}{3}, 2 \right\}$$

$$٨ - \text{ب}) |x_{n+1}| - |n+3| \geq 0 \rightarrow |x_{n+1}| \geq |n+3| \xrightarrow{\text{توازن}} x_n^2 + x_{n+1} \geq n^2 + 4n + 9 \rightarrow x_n^2 - x_n - 8 \geq 0$$

$$\frac{-\frac{4}{3} \pm 2}{+0-0+} \rightarrow D_f = (-\infty, -\frac{4}{3}] \cup [2, +\infty)$$

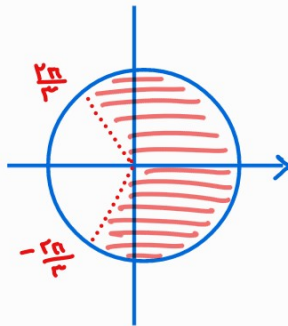
$$٩) \log_{1.5} \log_{1.5}^{x_{n-1}} \rightarrow x_{n-1} > 0 \rightarrow \boxed{n > \frac{1}{2}}$$

$$\log_{1.5}^{x_{n-1}} > 0 \rightarrow x_{n-1} > 1 \rightarrow x_{n-1} > 1 \rightarrow \boxed{n > 1}$$

$$\log_{1.5} \log_{1.5}^{x_{n-1}} \geq 0 \xrightarrow{\text{منابعه دوا حبه عوض مستعد!}} \log_{1.5}^{x_{n-1}} \leq \frac{1}{2} \rightarrow \log_{1.5}^{x_{n-1}} \leq 1 \rightarrow x_{n-1} \leq 5 \rightarrow x_n \leq 4 \rightarrow \boxed{n \leq 3}$$

$$\hookrightarrow D_f = (1, 3]$$

$$١٥ - \text{الف}) C \cdot \sin + 1 > 0 \rightarrow C \cdot \sin > -\frac{1}{2}$$



$$\rightarrow D_f = (2k\pi - \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6})$$