

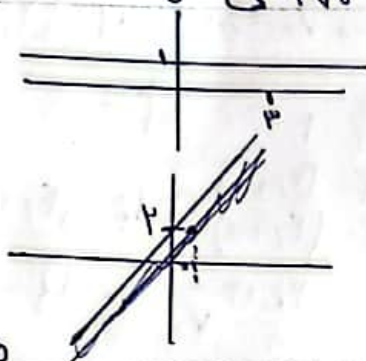
نام و نام خانوادگی محمدپارسا پاپاکی لطیف پاسخنانه تشریحی تکلیف شماره ۳۰۰۰ کلاس دوم ریاضی - شبانه

الف) $y^3 - x = 2x^2 \rightarrow y_1^3 = x_1 + 2x_1^2$
 $y_2^3 = x_2 + 2x_2^2$ } $x_1 = x_2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1 = y_2$ تابع است

ب) $|y| + x^2 = x + 3 \rightarrow |y| = x - x^2 + 3 \xrightarrow{x=0} |y| = 3 \Rightarrow y = 3, y = -3$ تابع نیست

ج) $\sqrt{x-4} + |y-2| = 0 \xrightarrow{x=4, y=2} \Rightarrow$ تابع است

د) $x = \cos y \xrightarrow{x=0} y = 90^\circ, 270^\circ$ تابع نیست



الف) $y = k$

ب) $y = 2x + 2$

$y = ax + b$
 $y = x$

$\Rightarrow a + 2b = 1 + 0 = 1$

الف)

$y = x^2 + ax + b \rightarrow \text{ext} \begin{cases} -\frac{b}{2a} = 2 \rightarrow 2a = -b \\ -\frac{\Delta}{4a} = 1 \rightarrow \frac{b^2 - 4ac}{4a} \rightarrow 2a = -b^2 + 4ac \end{cases}$
 $\Rightarrow -b = -b^2 + 4ac \Rightarrow b(b-1) = -4ac \Rightarrow b=1, c=-1, a=-1 \Rightarrow -1+1=0$

الف) $y = x^2 + 1$

ب) $y = -x^2 + 1$

ج) $y = x^3$

د) $y = x^4$

الف) $y = |x-2| + 3$

ب) $y = -|x+3| + 1$



$y = \frac{x+1}{x^2-14x+4} \rightarrow -b \pm \sqrt{b^2-4ac} = \frac{1 \pm \sqrt{196-4}}{2} \neq 0 \Rightarrow D_f = \mathbb{R}$

الف) $y = \frac{x+1}{x^2-4x} = \frac{(x+1)}{x(x-4)} \rightarrow \frac{-1 \pm \sqrt{16-4}}{2} = \frac{-1 \pm \sqrt{12}}{2} \neq 0 \Rightarrow D_f = [-1, 0) \cup (1, +\infty)$

ج) $y = \frac{x+1}{x^2+9x+4} = \frac{-1 \pm \sqrt{81-4}}{2} = \frac{-1 \pm \sqrt{77}}{2} \neq 0 \Rightarrow D_f = \mathbb{R}$

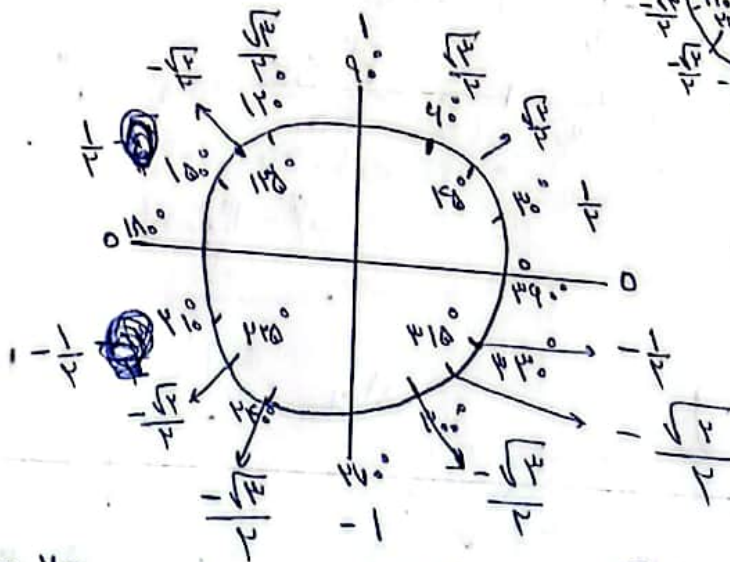
$y = \frac{x+1}{x^2-4x} = \frac{(x+1)}{x(x-4)} \rightarrow \frac{-1 \pm \sqrt{16-4}}{2} = \frac{-1 \pm \sqrt{12}}{2} \neq 0 \Rightarrow D_f = [-1, 0) \cup (1, +\infty)$

الف) $y = \sqrt{4-x} + \sqrt{x-2} \begin{cases} 4-x \geq 0 \Rightarrow D_f = (-\infty, 4] \\ x-2 \geq 0 \Rightarrow D_f = [2, +\infty) \end{cases} \cap [2, 4] = D_f$

$y = \frac{x^2+1}{x^2+1} \rightarrow x^2+1 \neq 0 \rightarrow (x^2) \neq -1 \Rightarrow D_f = \mathbb{R}$

ج) $y = \frac{\sqrt{x-2}}{x-4} \rightarrow x-2 \geq 0 \Rightarrow D_f = (2, +\infty) \cap D_f = (4, +\infty)$

د) $y = \frac{2x+3}{|x|+x} \rightarrow \begin{cases} x \geq 0 \Rightarrow \frac{2x+3}{2x} \rightarrow D_f = (-\infty, -1] \cup (0, +\infty) \\ x < 0 \Rightarrow \frac{2x+3}{-x} \end{cases}$



الف) $\cos \frac{2\pi}{3} = -\frac{1}{2} \rightarrow -\left(\frac{1}{2}\right) = \sin \frac{\pi}{6} = \sin \frac{\pi}{6} / \frac{\pi}{6}$

ب) $\cos \frac{4\pi}{3} = -\frac{1}{2} \rightarrow -\left(\frac{1}{2}\right) = \sin \frac{\pi}{6} = \sin \frac{\pi}{6} / \frac{\pi}{6}$