

نام و نام خانوادگی: پانزدهم تشریحی تکلیف شماره ۳ ... کلاس دهم ریاضی ... بخشیه...

۱۶:۳۰ - ۱۸:۳۰

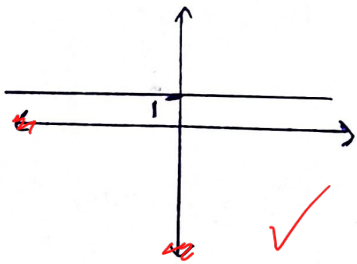
الف) $y^3 - x = 2x^2 \rightarrow y^3 = 2x^2 + x$ تعریف ریاضی: $\begin{cases} y_1^3 = 2x_1^2 + x_1 \\ y_2^3 = 2x_2^2 + x_2 \end{cases} \xrightarrow{x_1 = x_2} y_1^3 = y_2^3 \rightarrow \boxed{y_1 = y_2}$ پس تابع است.

ب) $|y| + x^2 = x + 3 \quad x = 0 \Rightarrow |y| = 3 \Rightarrow \begin{cases} y = +3 \\ y = -3 \end{cases}$ پس تابع نیست (مثال نقض)

ج) $\sqrt{x-4} + |y-2| = 0 \Rightarrow \sqrt{x-4} = -|y-2|$ فقط در نقطه $(4, 2)$ تعریف شده (پس تابع است). $\sqrt{x-4} = 0 \rightarrow x-4=0 \rightarrow \boxed{x=4}$
 $-|y-2| = 0 \rightarrow |y-2|=0 \rightarrow \boxed{y=2}$
 هر دو فقط صفر می‌توانند باشند

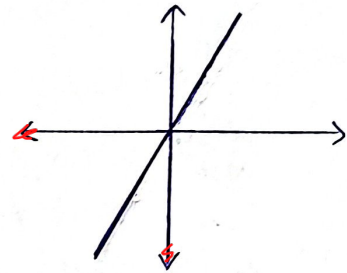
د) $x = \cos y$ مثال نقض: $x=0 \rightarrow \cos y = 0 \rightarrow y = k\pi + \frac{\pi}{2} \quad (\frac{\pi}{2}, \frac{3\pi}{2}, \dots)$ پس تابع نیست.

الف) ضابطه: $y=1$



ب) $y = ax + b \Rightarrow 2 = 2(1) + b \Rightarrow b = 0$

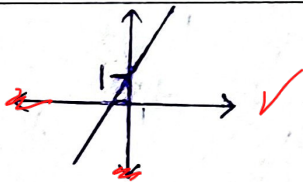
ضابطه: $y = 2x$



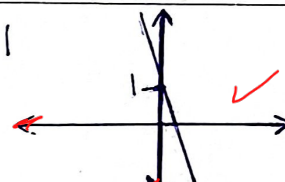
الف) تابع هانی: $y=x$ $y = ax + b \Rightarrow a + 2b = 1 + 2(0) = 1$
 $a=1 \quad b=0$

ب) $y = x^2 + ax + b \rightarrow \min$ ضابطه x : $\frac{-a}{2} = \frac{-a}{2(1)}$
 $\frac{4b - a^2}{4} = \frac{4b - (-4)^2}{4} = \frac{4b - 16}{4}$
 $\frac{4b - 16}{4} = 1 \Rightarrow 4b - 16 = 4 \Rightarrow 4b = 20 \Rightarrow b = 5$
 $a + 2b = -4 + 2(5) = 6$

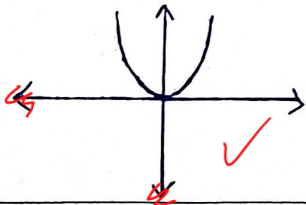
الف) $y = 2x + 1$



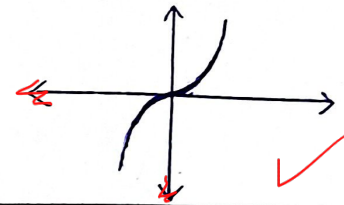
ب) $-3x + 1$



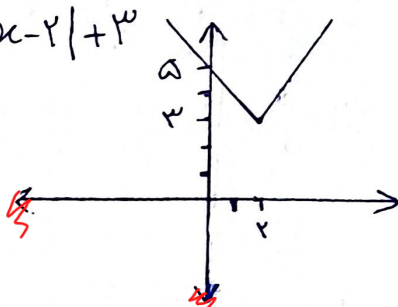
ج) $y = x^2$



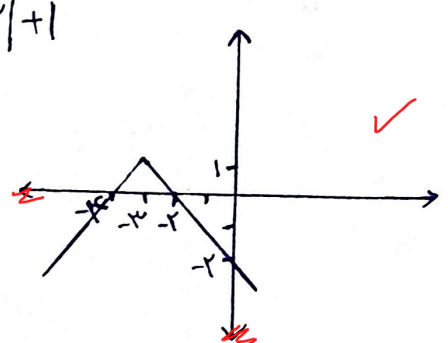
د) $y = x^3$



الف) $y = |x-2| + 3$



ب) $y = -|x+3| + 1$



الف) $y = \frac{x+4}{x^2-4x}$ $x^2-4x \neq 0 \Rightarrow x(x-4) \neq 0 \begin{cases} x \neq 0 \\ x-4 \neq 0 \rightarrow x \neq 4 \end{cases}$ $D_f = \mathbb{R} - \{0, 4\}$

ب) $y = \frac{x+4}{x^2-4x+4}$ $x^2-4x+4 \neq 0 \checkmark$ $\Delta = b^2-4ac = (-4)^2-4(1)(4) = -16 \rightarrow \Delta < 0 \rightarrow$ فاقد ریشه حقیقی $D_f = \mathbb{R}$

ج) $y = \frac{x+4}{x^2+x+4}$ $x^2+x+4 \neq 0 \checkmark$ $\Delta = b^2-4ac = (1)^2-4(1)(4) = -15 \rightarrow \Delta < 0 \rightarrow$ فاقد ریشه حقیقی $D_f = \mathbb{R}$

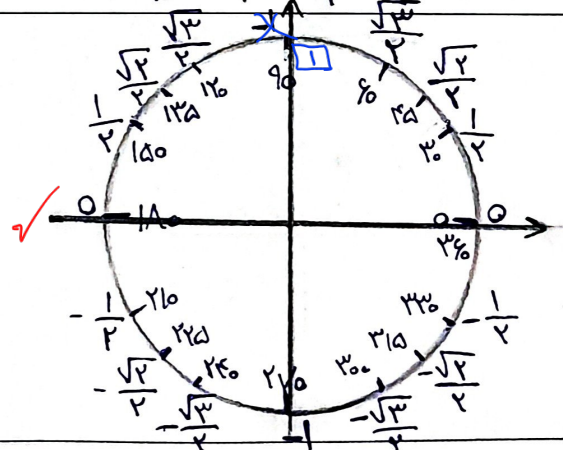
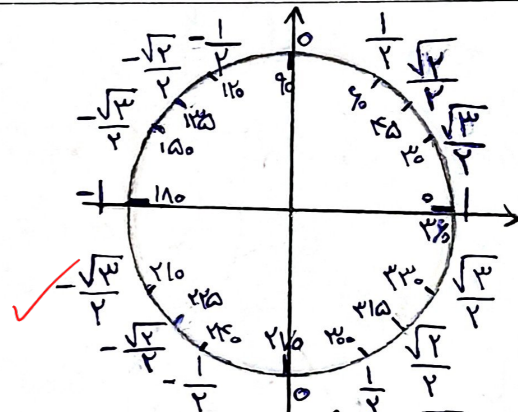
د) $y = \frac{x+4}{x^2-4x^2}$ $x^2-4x^2 \neq 0 \Rightarrow x^2(x+4)(x-4) \neq 0 \begin{cases} x \neq 0 \\ x \neq -4 \\ x \neq 4 \end{cases}$ $D_f = \mathbb{R} - \{-4, 0, 4\}$

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

ب) $y = \frac{3x+1}{x^2+1}$ $x^2+1 \neq 0 \checkmark \rightarrow D_f = \mathbb{R}$

ج) $y = \frac{\sqrt{x-2}}{x-4}$ $\begin{cases} \sqrt{x-2} \geq 0 \Rightarrow x-2 \geq 0 \Rightarrow x \geq 2 \\ x-4 \neq 0 \Rightarrow x \neq 4 \end{cases} \Rightarrow D_f = [2, 4) \cup (4, +\infty)$

د) $y = \frac{2x+3}{|x|+x^2}$ $|x|+x^2 \neq 0 \Rightarrow x \neq 0$ $D_f = \mathbb{R} - \{0\}$



الف) $-\cos \frac{2\pi}{3} = -(-\frac{1}{2}) = \frac{1}{2}$ $\frac{1}{2} = \sin x \Rightarrow x = k\pi + \frac{\pi}{6}, k\pi - \frac{\pi}{6}$ $(\frac{\pi}{6}, \frac{5\pi}{6}, \dots)$

$x = 2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}$

کتاب دروس ریاضی

ب) $-\cos \frac{11\pi}{6} = -(\frac{\sqrt{3}}{2}) = -\frac{\sqrt{3}}{2}$ $-\frac{\sqrt{3}}{2} = \sin x \Rightarrow x = k\pi - \frac{\pi}{3}, k\pi + \frac{2\pi}{3}$ $(\frac{4\pi}{3}, \frac{2\pi}{3}, \dots)$

$2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}$