نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۳ ..... کلاس .....

۱۷٫۷۵

۱

الف) $y^3 - x = 2x^2 \xrightarrow{x=0} y^3 = 0$ ✓ ، $\xrightarrow{x=1} y^3 - 2 = 0$ ✓ ، $\xrightarrow{x=2} y^3 = 6$ ✓ → تابع هست

ب) $|y| + x^2 = x + 2 \xrightarrow{x=0} |y| = 2 \to y = \pm 2$ → تابع نیست (۱٫۵)

ج) $\sqrt{x-2} + |y-2| = 0 \xrightarrow{x=2} \sqrt{1} + |y-2| = 0 \to |y-2| = 1 \to y = 1+2, 3+2$ → تابع نیست

جمع دو عبارت همواره نامنفی برابر صفر شده پس هردو صفر هستند.

د) $x = \cos y \xrightarrow{x=0} \cos y = 0 \to y = 90^\circ, \to y = \frac{\pi}{2}, \frac{3\pi}{2}$ → تابع نیست

۲

الف) $y = \frac{x+2}{x^2 - 4x} \to x^2 - 4x = 0 \to x = 4 \to D_f = \mathbb{R} - \{4\}$ $\mathbb{R} - \{0, 4\}$

ب) $y = \frac{x+2}{x^2 - \sqrt{x} + 1} \to \Delta = \sqrt{b^2 - 4ac} \to \Delta = \sqrt{49 - 44} \to \Delta < 0 \to D_f = \mathbb{R}$ (۱٫۷۵) ✓

ج) $y = \frac{x+2}{x^2 + x + 2} \to \Delta = \sqrt{b^2 - 4ac} \to \Delta = \sqrt{1 - 14} \to \Delta < 0 \to D_f = \mathbb{R}$

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

۳

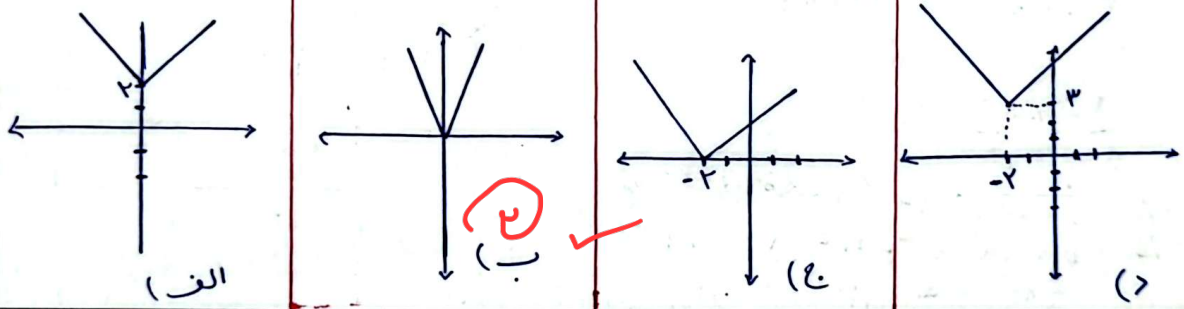
الف) $y = \sqrt{4-x} + \sqrt{x-2} \to \begin{matrix} 4 - x \geq 0 \to 4 \geq x \to (-\infty, 4] \\ x - 2 \geq 0 \to x \geq 2 \to [2, +\infty) \end{matrix} \} \xrightarrow{\cap} D_f = [2, 4]$

ب) $y = \frac{2x+1}{x^2+1} \to x^2 + 1 > 0$ همیشه $\to D_f = \mathbb{R}$

ج) $y = \frac{\sqrt{x-2}}{x-4} \to \begin{matrix} x - 4 = 0 \to x = 4 \\ x - 2 \geq 0 \to x \geq 2 \to [2, +\infty) \end{matrix} \} \xrightarrow{\cap} D_f = [2, +\infty) - \{4\}$ (۲) ✓

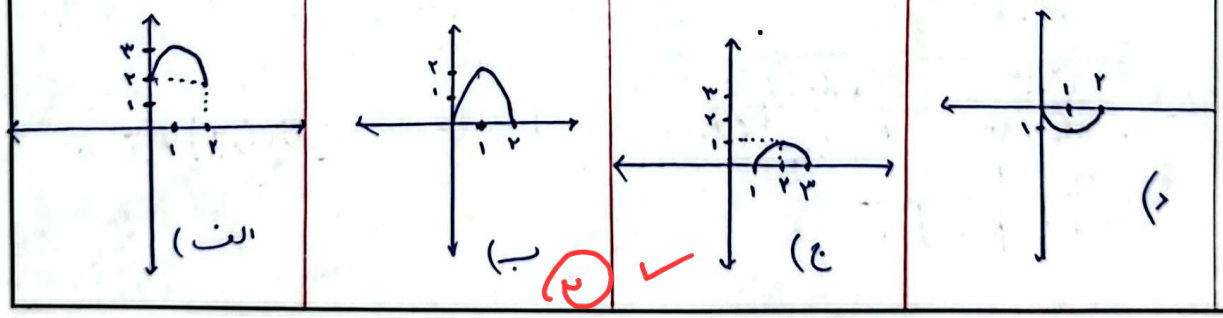
د) $y = \frac{2x+3}{|x| + x^2} \to |x| + x^2 = 0 \to$ تک تک عبارات $= 0 \to x = 0 \to D_f = \mathbb{R} - \{0\}$ ← جمع دو عبارت همیشه $+ = 0$

۴



الف) ب) (۲) ✓ ج) د)

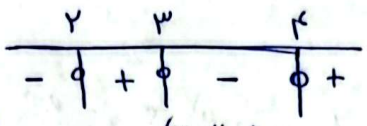
۵



الف) ب) (۲) ✓ ج) د)

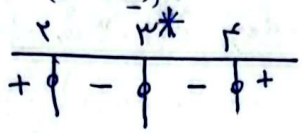
۶

الف) $y=(x-2)(x-3)(x-4)$



ب) $y=(x-2)(x-3)^2(x-4)$ (ریشه مضاعف)

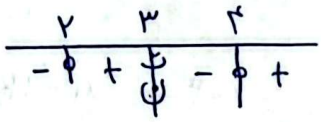
ج) $y=(x-2)(x-3)(x-3)(x-4)$



ب ✓ (۲)

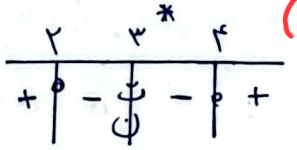
۷

الف) $y=\dfrac{(x-2)(x-4)}{x-3}$



ب) $y=\dfrac{(x-2)(x-4)}{(x-3)^2}$

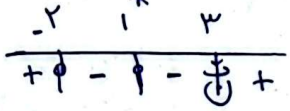
$\dfrac{}{(x-3)(x-3)}$



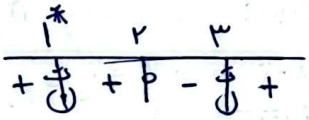
(۲) ✓

۸

الف) $y=\dfrac{x^2-3x+2}{x-3} \Rightarrow \dfrac{(x-1)(x-2)}{x-3}$



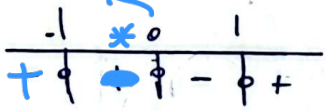
ب) $y=\dfrac{x^2-3x+2}{x^2-4x+3}=\dfrac{(x-1)(x-2)}{(x-1)(x-3)}$



(۲) ✓

۹

الف) $y=\dfrac{x^4-x^2}{x^2+x+2} \rightarrow \dfrac{x^2(x-1)(x+1)}{x^2+x+2}$

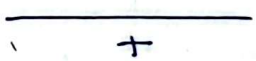


(۱٫۵)

ب) $y=\dfrac{x^2+3x+4}{x^2+2x+3}=$

صورت $\Delta \Rightarrow b^2-4ac=9-16 \rightarrow \Delta<0 \rightarrow$ صورت همیشه $+$

مخرج $\Delta \Rightarrow b^2-4ac=4-12 \rightarrow \Delta<0 \rightarrow$ همیشه $+$

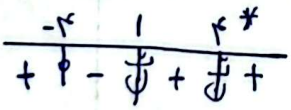


۱۰

الف) $y=\sqrt{\dfrac{x^2-1}{x^2-x}} \rightarrow \oplus \rightarrow \checkmark \quad \ominus \rightarrow \checkmark \quad \dfrac{x^2-x}{-} \rightarrow x(x-1)(x+1)$

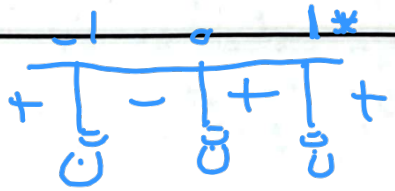
$\Rightarrow x=0, x=1, x=-1 \Rightarrow D_f=\mathbb{R}-\{0,1,-1\}$

ب) $y=\sqrt{\dfrac{x^2-16}{x^2-5x+4}} \Rightarrow \sqrt{\dfrac{(x-4)(x+4)}{(x-1)(x-4)}} \Rightarrow D_f=(-\infty,-4]\cup(1,4)\cup(4,+\infty)$



(۱)

تعیین علامت



$(-\infty,-1)\cup(0,+\infty)-\{1\}$