«به نام خدا»

تکالیف سری ۳ — لعیا کرباسیان . دهم دفتر B

۱۹/۵ — آفرین خیلی کامل نوشتی!

۱- (۲)

الف) $y_1^3 = 2x^2 - x$ ، $y_2^3 = 2x^2 - x$ ⟸ $y_1^3 = y_2^3$ ، $y_1 = y_2$ تابع هست

ب) $|y| + x^2 = x + 3 \xrightarrow{x=0} |y| = 3$ ، $y = \pm 3$ تابع نیست

ج) $\sqrt{x-4} + |y-2| = 0$
$y - 2 = 0$ ، $y = 2$ ؛ $x - 4 = 0$ ، $x = 4$
تابع هست به ازای (۴،۲)

د) $x = \cos y \xrightarrow{x=0} \cos y = 0$
$y = \{\frac{\pi}{2}, \frac{3\pi}{2}, \dots\}$

۲- (۲)

الف) $y = \frac{x+3}{x^2-4x}$
$x^2 - 4x \neq 0$
$x(x-4) \neq 0$
$x \neq 0, 4$
$D_f = R - \{0, 4\}$

ب) $\frac{x+4}{x^2-7x+16}$
$x^2 - 7x + 16 \neq 0$
$\Delta = 49 - 64 < 0$ هیچ وقت خروجی صفر نمی‌شود
$D_f = R$

ج) $y = \frac{x+4}{x^2+x+4}$
$x^2 + x + 4 \neq 0$
$\Delta = 1 - 16 < 0$ خروجی هیچ گاه صفر نمی‌شود
$D_f = R$

د) $\frac{x+4}{x^4-4x^2}$
$x^4 - 4x^2 \neq 0$
$x^2(x^2-4) \neq 0$
$x^2(x+2)(x-2) \neq 0$
$D_f = R - \{0, -2, 2\}$

۳- (۲)

الف) $\sqrt{6-x} + \sqrt{x-2}$
① $6 - x \geq 0$ ، $-x \geq -6$ ، $x \leq 6$
② $x - 2 \geq 0$ ، $x \geq 2$
$D_f = [2, 6]$

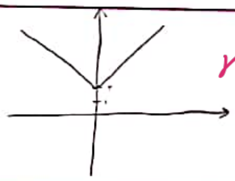
ب) $\frac{3x+1}{x^2+1}$
$x^2 + 1 \neq 0$ ✓
$D_f = R$

ج) $\frac{\sqrt{x-2}}{x-4}$
① $x - 2 \geq 0$ ، $x \geq 2$
② $x - 4 \neq 0$ ، $x \neq 4$
$D_f = [2, +\infty) - \{4\}$

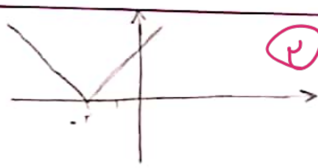
د) $\frac{2x+3}{|x|+x^2}$
$|x| + x^2 \neq 0$ ✓
$D_f = R - \{0\}$

۴- (۲)

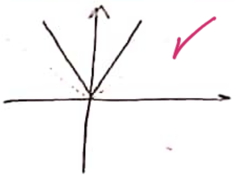
الف) $y = |x| + 2$



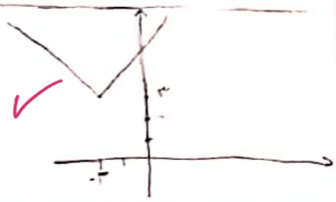
ج) $y = |x+2|$



ب) $y = 2|x|$

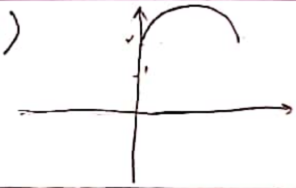


د) $y = |x+2| + 3$

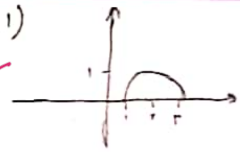


۵- (۱/۵)

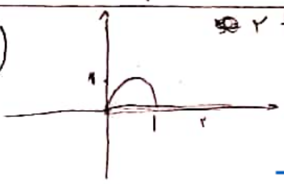
الف) $f(x) + 2$

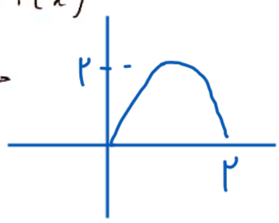


ج) $f(x-1)$

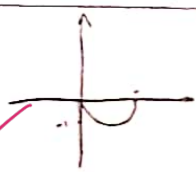


ب) $2f(x)$



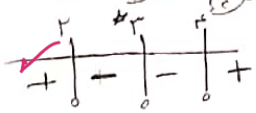


د) $-f(x)$

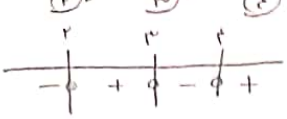


۶ (۲)

ب) $(x-2)(x-3)^2(x-4)$

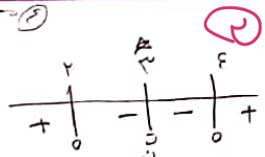


الف) $(x-2)(x-3)(x-4)$

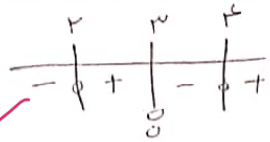


۷- (۲)

ب) $\frac{(x-2)(x-4)}{(x-3)^2}$

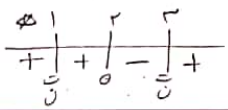


الف) $\frac{(x-2)(x-4)}{x-3}$

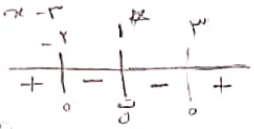


۸- (۲)

ب) $\frac{x^2-4x+3}{x^2-6x+8} = \frac{(x-1)(x-3)}{(x-2)(x-4)}$



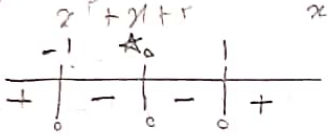
الف) $\frac{x^3-3x+2}{x-2} = \frac{(x-1)(x^2+x-2)}{x-2} = \frac{(x-1)(x+2)(x-1)}{x-2}$



۹- (۲)

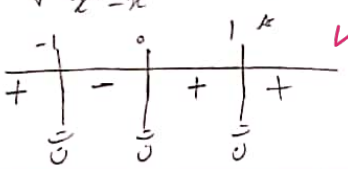
ب) $\frac{x^2+3x+6}{x^2+2x+3}$ صورت و مخرج همیشه >0 و صفر نمی‌شوند و عبارت همواره مثبت است

الف) $\frac{x^4-x^2}{x^2+x+2} = \frac{x^2(x+1)(x-1)}{x^2+x+2}$



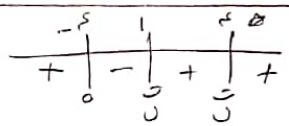
۱۰- (۲)

الف) $\sqrt{\frac{x^3-1}{x^3-x}}$ $\frac{x^3-1}{x^3-x} \geq 0$ $\frac{(x-1)(x^2+1+x)}{x(x^2-1)} \geq 0$ $\frac{(x-1)(x^2+x+1)}{x(x-1)(x+1)} \geq 0$



$D_f = (-\infty,-1) \cup (0,1) \cup (1,+\infty)$

ب) $\sqrt{\frac{12-x^2}{x^2-5x+4}}$ $\frac{12-x^2}{x^2-5x+4} \geq 0$ $\frac{(3+x)(3-x)}{(x-1)(x-4)}$



$D_f = (-\infty,-3] \cup (1,3) \cup (4,+\infty)$