

سؤال ۱: الف) $y^3 - x = 2x^2 \xrightarrow{\text{تعریف یابی}} \begin{cases} y_1^3 = 2x^2 + x \\ y_2^3 = 2x^2 + x \end{cases} \Rightarrow y_1^3 = y_2^3 \Rightarrow \boxed{y_1 = y_2}$
تابع هست

ب) $|y| + x^2 = x + 2 \xrightarrow{\text{میانگین}} |y| = 4 \rightarrow y = \pm 2$ تابع نیست

ج) $\sqrt{x-4} + |y-2| = 0 \rightarrow |y-2| = 0 \rightarrow y=2$
 $\hookrightarrow x-4=0 \rightarrow \boxed{x=4}$ تابع هست $(4, 2)$

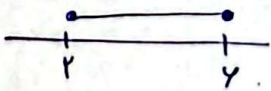
د) $x = \cos y \xrightarrow{\text{میانگین}} \cos y = 0 \rightarrow 90^\circ, 270^\circ$ تابع نیست

سؤال ۲: الف) $y = \frac{x+4}{x^2-4x} \rightarrow x \geq -4$
 $x^2-4x \rightarrow x^2-4x > 0 \rightarrow x(x-4) \Rightarrow D_f = \mathbb{R} - \{0, 4\}$

ب) $y = \frac{x+4}{x^2-4x+4} \Rightarrow D_f = \mathbb{R}$
کدام منفی است

ج) $y = \frac{x+4}{x^2+x+4} \Rightarrow D_f = \mathbb{R}$
کدام منفی است

د) $y = \frac{x+4}{x^2-4x^2} \rightarrow x^2(x^2-4) > 0 \Rightarrow D_f = \mathbb{R} - \{-2, 0, 2\}$

سؤال ۳: الف) $y = \sqrt{4-x} + \sqrt{x-2}$
 $\hookrightarrow x-2 \geq 0 \rightarrow x \geq 2$
 $4-x \geq 0 \rightarrow \boxed{x \leq 4}$
نمودار:  $D_f = [2, 4]$

ب) $y = \frac{x^3+1}{x^2+1} \rightarrow x^2+1 > 0 \rightarrow x^2 \geq -1 \Rightarrow D_f = \mathbb{R}$

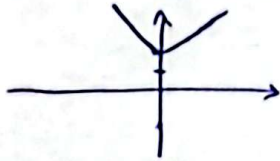
ادامه سؤال ۱:

ج) $y = \frac{\sqrt{x-2}}{x-4} \rightarrow x-2 \geq 0 \rightarrow x \geq 2$
 $\rightarrow \cancel{x-4 \neq 0 \rightarrow x \neq 4}$
 $x-4 \neq 0 \rightarrow x \neq 4$

$\Rightarrow D_f = [2, +\infty) - \{4\}$

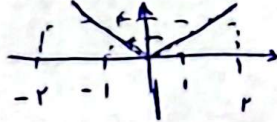
د) $y = \frac{2x+1}{|x|+x^2} \rightarrow x=0 \rightarrow$ مخرج صفر و تعریف نشده $\Rightarrow D_f = \mathbb{R} - \{0\}$

الف) $y = |x| + 2 \rightarrow$

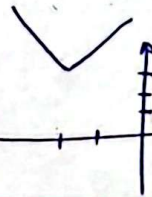


سؤال ۴:

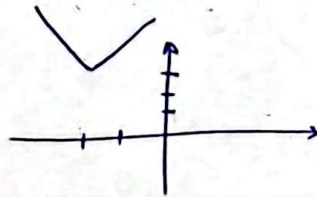
ب) $y = 2|x| \rightarrow$



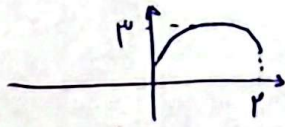
ج) $y = |x+2| \rightarrow$



د) $y = |x+2| + 2 \rightarrow$

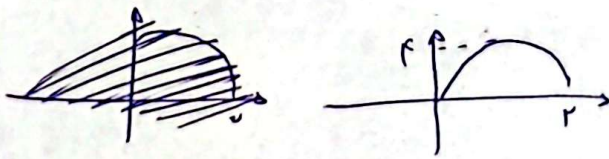


الف) $f(x) + 2 \rightarrow$

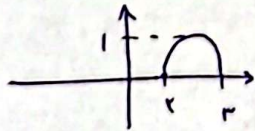


سؤال ۵:

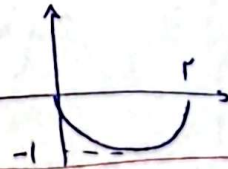
ب) $2f(x) \rightarrow$



ج) $f(x-1) \rightarrow$



د) $-f(x) \rightarrow$



الف) $y = \left(\frac{x-2}{2}\right)\left(\frac{x-3}{3}\right)\left(\frac{x-4}{4}\right) = \frac{1}{24}(x-2)(x-3)(x-4)$

سؤال ۶:

ب) $y = \left(\frac{x-2}{2}\right)\left(\frac{x-3}{3}\right)^2\left(\frac{x-4}{4}\right) = \frac{1}{24}(x-2)(x-3)^2(x-4)$

الف) $y = \frac{(x-1)(x-2)^2}{x-1} \rightarrow$

سؤال ٧:

ب) $y = \frac{(x-1)(x-2)^2}{(x-1)^2} \rightarrow$

الف) $y = \frac{x^3 - 3x + 2}{x-1}$

سؤال ٨:

$\rightarrow \frac{x^3 - 3x + 2}{-x^2 + x^2} \left| \begin{array}{l} x-1 \\ x^2 + x - 2 \end{array} \right. \rightarrow \frac{(x-1)(x-2)}{(x-1)(x-2)}$

$\frac{-2}{+} \quad \frac{1}{-} \quad \frac{2}{-} \quad \frac{+}{+}$

$x^3 - 3x + 2$

$-x^2 + x^2$

$-2x + 2$

$2x - 2$

0

ب) $y = \frac{x^3 - 3x + 2}{x^2 - 5x + 6} \rightarrow \frac{(x-1)(x-2)}{(x-1)(x-2)}$

$\frac{-1}{-} \quad \frac{2}{+} \quad \frac{2}{-} \quad \frac{+}{+}$

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

$\frac{0}{+} \quad \frac{-1}{+} \quad \frac{1}{-} \quad \frac{+}{+}$

سؤال ٩:

Δ منفى

اسأل اب

الف) $y = \sqrt{\frac{x^2 - 1}{x^2 - x}} \rightarrow x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow x = \pm 1$

سؤال ١٠:

$\rightarrow x^2 - x \geq 0 \rightarrow x(x-1) \geq 0 \rightarrow$

$\frac{-1}{+} \quad \frac{0}{-} \quad \frac{1}{+} \quad \frac{+}{+}$

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

ب) $y = \sqrt{\frac{x^2 - 14}{x^2 - 5x + 6}} \rightarrow x^2 - 14 \geq 0 \rightarrow x^2 \geq 14 \rightarrow x = \pm \sqrt{14}$

$\frac{-\sqrt{14}}{+} \quad \frac{1}{-} \quad \frac{\sqrt{14}}{+} \quad \frac{+}{+}$

$\rightarrow D_f = (-\infty, -\sqrt{14}] \cup (1, \sqrt{14}) \cup [\sqrt{14}, +\infty)$