

۱۸، ۷۵

الف: $y^3 = 2x^2 - 2x + 1 \rightarrow y = \sqrt[3]{2x^2 - 2x + 1} \rightarrow$ تابع است ✓

ب: $y = x \cdot \frac{\cos y}{\cos x} \rightarrow \frac{y}{\cos y} = \frac{x}{\cos x} \rightarrow \frac{y_1}{\cos y_1} = \frac{x_1}{\cos x_1} \rightarrow \frac{y_1}{\cos y_1} = \frac{x_1}{\cos x_1} \rightarrow \cos y_1 = \cos x_1 \rightarrow y_1 = x_1$ تابع نیست ✓

ج: $\frac{x-y}{y} = \sqrt{xy} \rightarrow y = \sqrt{\frac{x-y}{y}} \rightarrow y^2 = \sqrt{x-y} \rightarrow y^4 = x-y \rightarrow x = y^4 + y$ تابع نیست ✓

د: $y^3 + 2y - x^2 = 2x + x^2 \rightarrow x(2+y^2) = y^3 + 2y \rightarrow \frac{y^3 + 2y}{2+y^2} = x$ تابع است ✓

الف: $y = \frac{x^2 - |y|}{y} \rightarrow x^2 - |y| = y^2 \rightarrow x^2 = y^2 + |y|$ تابع است ✓

ب: $y \geq 0 \Rightarrow x^2 = y^2 + y \rightarrow x = \sqrt{y^2 + y}$ تابع است ✓

ج: $y \leq 0 \Rightarrow x^2 = y^2 - y \rightarrow x = \sqrt{y^2 - y}$ تابع است ✓

د: $y = 1 \Rightarrow x = 0$ و $x = -1$ تابع نیست ✓

$\begin{cases} 2x^2 - b & |x-1| \geq 1 \\ a + 2x & 0 \leq x \leq 3 \end{cases} \Rightarrow \begin{cases} x \geq 2 \\ x \leq -1 \end{cases}$

$x = 3 \Rightarrow 2x^2 - b = a + 2x \Rightarrow 18 - b = a + 6 \Rightarrow 12 = a + b$ ✓

$a \neq b \rightarrow 0 \Rightarrow a - ab - b^2 = 0 \Rightarrow a = 0$ ✓

$a = a \rightarrow 0 \Rightarrow a - ab - a^2 = 0 \Rightarrow a = 0$ ✓

$a \neq b \rightarrow 1 \Rightarrow a - ab - b^2 = 1 \Rightarrow a = 1$ ✓

$S = -\frac{b}{a} = -1$ ✓

$P = \frac{c}{a} = -1$ ✓

$a = 1, b = -1$ ✓

$(-\infty, 2) \rightarrow$ کرانه باز $\Rightarrow a = 0, b < 0$ ✓

$2b + c = 0 \Rightarrow c = -2b$ ✓

$\Rightarrow 3a + c - 3|b| = c + 3b \Rightarrow c = -2b$ ✓

$$\text{ب. } \sqrt{x} + \sqrt{y} = 9 \rightarrow \begin{cases} x \geq 0 \\ \sqrt{y} = 9 - \sqrt{x} \xrightarrow{y \geq 0} 0 \leq x \leq 81 \end{cases} \xrightarrow{0} [0, 81] \quad \text{---}^{\wedge}$$

$$\left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right] > 0 \rightarrow \left[x - \frac{1}{x}\right] + \left[x - \frac{1}{x} + 1\right] > 0 \quad \text{---}^9$$

$$2\left[x - \frac{1}{x}\right] + 1 > 0 \rightarrow \left[x - \frac{1}{x}\right] > -\frac{1}{2} \rightarrow x - \frac{1}{x} \geq 0 \rightarrow \boxed{x \geq \frac{1}{x}}$$

$$D = \left[\frac{1}{x}, +\infty\right)$$