

۲۰

طالع‌های حرام

$$y^3 - rx^2 = rx - 1 \rightarrow y^3 = rx^2 + rx - 1 \Rightarrow y = \sqrt[3]{rx^2 + rx - 1} \rightarrow \text{تابعی نیست} \quad \text{ب} \quad rx^2 + rx - 1 \rightarrow \text{تابع} \quad (r)$$

$$5. \text{ ب) } x \cos y = y \cos x \quad x = \frac{\pi}{r} \rightarrow \frac{\pi}{r} \cos y = y \cos \frac{\pi}{r} \Rightarrow y = \frac{\pi}{r}, \frac{2\pi}{r}, \frac{3\pi}{r}, \dots \Rightarrow \text{تابعی نیست} \quad \checkmark$$

$$\text{ج) } \frac{x+y}{r} = \sqrt{xy} \quad x, y > 0 \quad x+y = r\sqrt{xy} \rightarrow x+y - r\sqrt{xy} = 0 = (\sqrt{x} - \sqrt{y})^2 = 0 \Rightarrow \sqrt{x} = \sqrt{y} \Rightarrow x = y \Rightarrow \text{تابعی نیست} \quad \checkmark$$

10.

$$\text{د) } xy^2 + rx - y^3 - ry = 0 \rightarrow x(y^2 + r) - y(y^2 + r) = (y^2 + r)(x - y) = 0 \Rightarrow x - y = 0 \Rightarrow x = y \Rightarrow \text{تابعی نیست} \quad \checkmark$$

$$15. |y| + x^2 = ry \Rightarrow |y| - ry + x^2 = 0 \Rightarrow -ry > 0 \Rightarrow \text{تابعی نیست} \Rightarrow y - ry + x^2 > 0 \Rightarrow y = x^2 \quad \text{تابعی نیست} \quad (r)$$

$$[y] + [x] = 1 \quad \text{if } x = \frac{1}{r} \quad [y] + 0 = 1 \Rightarrow [y] = 1 \Rightarrow 1 \leq y < 2 \rightarrow \text{تابعی نیست} \quad \checkmark$$

$$\begin{cases} rx^2 = b & |x-1| \geq r \\ a + rx & 0 \leq x \leq r \end{cases} \quad |x-1| \geq r \rightarrow x-1 \geq r \rightarrow x \geq r+1 \rightarrow x \geq 3 \quad (r)$$

20.

$$\begin{matrix} r \\ \searrow \\ a+b \end{matrix} \rightarrow a+b = 1r \quad \checkmark$$

$$a, b = 1 \text{ یا } -1, \quad \frac{-b}{a} = \frac{b}{-1} = -b \rightarrow a+b = -b \Rightarrow a = -rb \quad (r)$$

$$\frac{c}{a} = \frac{a}{-1} = -a \rightarrow ab = -a \Rightarrow b = -1 \quad a = -rb, b = -1 \Rightarrow a = r, b = -1 \quad r + (-1) = 1 \quad \checkmark$$

25.

$$ax^2 + bx + c \geq 0 \rightarrow \text{بازجهیب باشد، ص ۱ است} \Rightarrow a = 0 \rightarrow bx + c \rightarrow rb + c = 0 \Rightarrow c = -rb \quad (r)$$

$$\text{ص ۲ است} \Rightarrow b < \dots \quad 3a + c - r|b| = 3a + c + rb = (3 \times 0) + (-rb) + rb = 0 \quad \checkmark$$

30.

Subject:

Year: Month: Day: ()

Page: ()

$$\begin{aligned} 5 \quad \text{ج} \quad x + b = 0 &\Rightarrow b = -x \quad \checkmark & \frac{3x+2}{x-2} - 2 &= \frac{1}{x-2} & \text{---} \quad \text{r} \\ 12 \quad \text{ع} \quad \frac{a}{c} = 0 &\Rightarrow (3+a)x = 0 \Rightarrow a = -3 \quad \checkmark \end{aligned}$$

$$\begin{aligned} 5 \quad \text{الف} \quad \sqrt{x^2-x} &\quad x(x^2-1) \geq 0 & \begin{array}{c} -1 & 0 & 1 \\ | & | & | \\ - & + & - \end{array} &\quad D = [-1, 0] \cup [1, +\infty) \quad \checkmark & \text{---} \quad \text{r} \end{aligned}$$

$$\begin{aligned} \text{ب} \quad \frac{1}{\sqrt{|x|-1}} &\quad |x|-1 > 0 \Rightarrow |x| > 1 & x > 1 \vee x < -1 &\quad \checkmark \\ & & (1, +\infty) \cup (-\infty, -1) & \end{aligned}$$

$$\begin{aligned} \text{الف} \quad |x| - [x] &= 0 \Rightarrow |x| = [x] \Rightarrow D = \mathbb{R} \quad \checkmark & \text{---} \quad \text{r} \end{aligned}$$

$$\begin{aligned} 10 \quad \text{ب} \quad \sqrt{x} + \sqrt{y} &= 9 \Rightarrow \sqrt{y} = 9 - \sqrt{x} & 9 - \sqrt{x} \geq 0 &\Rightarrow x \leq 81 \\ & & x \geq 0 &\quad 0 \leq x \leq 81 \quad \checkmark \end{aligned}$$

$$\begin{aligned} 15 \quad [rx - \frac{1}{r}] &= [rx + \frac{1}{r+1}] - 1 \rightarrow [rx + \frac{r}{r}] = [rx + \frac{1}{r}] + 1 & \text{---} \quad \text{r} \\ \rightarrow r[rx + \frac{1}{r}] &> 0 \rightarrow rx + \frac{1}{r} \geq 0 \rightarrow rx \geq -\frac{1}{r} \rightarrow x \geq -\frac{1}{r} \quad \checkmark & \text{---} \quad \text{r} \end{aligned}$$

$$\begin{aligned} rx - a &> 0 \rightarrow x > \frac{a}{r} & 1 - \log(r(x-a)) &\geq 0 \rightarrow 1 \geq \log_1(r(x-a)) \rightarrow 1 \geq r(x-a) \rightarrow \frac{1+a}{r} \geq x & \text{---} \quad \text{r} \\ \Rightarrow \frac{a}{r} < x < \frac{1+a}{r} &\Rightarrow -\frac{a}{r} + \frac{1+a}{r} = \frac{1}{r} = \Delta \quad \checkmark & \text{---} \quad \text{r} \end{aligned}$$

$$\begin{aligned} 25 & \\ 30 & \end{aligned}$$