

$$y = \sqrt{\frac{rx+r}{x+b} + a} \quad D = (r, \infty) \quad b. ?$$

$$\frac{rx+r}{x+b} + a \geq 0 \rightarrow \frac{rx+r+ax+ba}{x+b} \geq 0 \rightarrow \frac{(r+a)x+r+ab}{x+b} \geq 0$$

$$\sim \text{نخرج} = x = -b \rightarrow -b = r \sim \underline{b = -r}$$

$$\text{الف) } y = \sqrt{x^r \cdot x}$$

$$x^r \cdot x \geq 0 \rightarrow x(x^{r-1}) \geq 0$$

$$\begin{array}{c} -1 \quad 0 \quad 1 \\ -1 \quad -1 \quad -1 \end{array}$$

$$D = [-1, 0] \cup [1, \infty)$$

$$\text{ب) } y = \frac{1}{\sqrt{|x|-1}}$$

$$|x|-1 > 0 \rightarrow |x| > 1$$

$$|x| > 1, \quad x < -1.$$

$$D = (-\infty, -1) \cup (1, \infty)$$

$$\text{الف) } y = \sqrt{\frac{1}{|x| - [x]}}$$

$$|x| - [x] \neq 0 \rightarrow w$$

$$D = \mathbb{R} - w$$

$$\text{ب) } \sqrt{x} + \sqrt{y} = 9$$

$$\sqrt{y} = 9 - \sqrt{x} \xrightarrow{\text{رأس}} y = 81 + x - 18\sqrt{x}$$

$$x \geq 0 \quad \sim D = [0, 81]$$

$$y = \frac{1}{\sqrt{[rx - \frac{1}{r}] + [rx + \frac{1}{r}]}} \rightarrow [rx - \frac{1}{r}] + [rx + \frac{1}{r}] \geq 0 \rightarrow [rx - \frac{1}{r} - 1] + [rx + \frac{1}{r} + 1]$$

$$\rightarrow [rx - \frac{1}{r} - 1] + [rx + \frac{1}{r} + 1] \geq 0 \rightarrow r[rx + \frac{1}{r}] \geq 0 \rightarrow [rx + \frac{1}{r}] \geq 0$$

$$\rightarrow rx + \frac{1}{r} \geq 0 \rightarrow rx \geq -\frac{1}{r} \rightarrow \underline{x \geq -\frac{1}{r}}$$

$$y = \sqrt{1 - \log(rx-a)} \quad D = (b, c]$$

$$1) rx - a > 0 \sim x > \frac{a}{r}$$

$$2) 1 - \log^{rx-a} \geq 0 \rightarrow 1 \geq \log^{rx-a} \sim 10 \geq rx - a \rightarrow \frac{10+a}{r} \geq x$$

$$\rightarrow b = \frac{a}{r}, \quad c = \frac{10+a}{r} \Rightarrow c - b = \frac{10+a}{r} - \frac{a}{r} = \frac{10}{r} = \underline{\omega}$$

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$y'' - 2x' = 2x - 1$ $\left. \begin{aligned} y_1' &= 2x_1' + 2x_1 - 1 \\ y_2' &= 2x_2' + 2x_2 - 1 \end{aligned} \right\}$ $y_1, y_2, y_3, y_4 = y$ تابع است	$b) \quad x \cos y = y \cos x$ $x = \frac{\pi}{2} \rightarrow \frac{\pi}{2} \cos y = 0$ $-\cos y = 0 \sim y = \frac{\pi}{2}$ تابع نیست	$c) \quad \frac{x+y}{x-y} = \sqrt{xy}$ $x+y = \sqrt{xy} \rightarrow x+y-2\sqrt{xy} = 0$ $(\sqrt{x} - \sqrt{y})^2 = 0$ $(\sqrt{x} - \sqrt{y}) = 0 \rightarrow x=y$ تابع است	$d) \quad xy^2 + 2x - y^2 + y = 0$ $x(y^2 + 2) - y(y^2 + 2) = 0$ $(y^2 + 2)(x - y) = 0$ $y^2 + 2 \neq 0 \rightarrow x - y = 0 \rightarrow x = y$ تابع است
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$a) \quad y + x^2 = 2y$ $\left. \begin{aligned} y \geq 0 &\sim y = x^2 \\ y < 0 &\sim y = \frac{x^2}{2} \end{aligned} \right\}$ تابع است لحظه‌ای نیست، منفرد است	$b) \quad [y] + [x] = 1$ $x = 0 \sim [y] = 1$ $\sim 1 \leq y < 2$ تابع نیست
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$f(x) = \begin{cases} 2x^2 - b & x-1 > 2 \\ a + 2x & 0 \leq x \leq 4 \end{cases}$ $x=3 \rightarrow 2 \times 9 - b = a + 6$ $\sim 18 - b = a + 6 \sim a + b = 12$	۳
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$f(x) = \sqrt{a-bx-x^2} \quad D: [b, a] \quad a+b =$ $-x^2 - bx + a \geq 0 \sim -(x-b)(x-a) = -x^2 + (a+b)x - ab$ $\Rightarrow a+b = -b \rightarrow a = -2b, -ab = a \xrightarrow{a \neq 0} b = -1 \Rightarrow a = 2$ $a+b = 2-1 = 1$	۴
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$f(x) = \frac{x}{\sqrt{4x^2 + bx + c}} \quad (-\infty, r) \rightarrow ax^2 + bx + c > 0 \quad \frac{x \rightarrow r}{y \rightarrow 0} \rightarrow ra + rb + c = 0$ $a < 0$ $-a(x-r)^2 \leq a(x^2 - \varepsilon x + \varepsilon) = ax^2 - \varepsilon ax + \varepsilon a \Rightarrow b = -fa \rightarrow a = -\frac{b}{f}$ $c = fa \rightarrow c = -b$ $ra + c - r b = (3 - \frac{b}{f}) - b - 2 b = -\frac{3b}{f} - b - 2 b = -\frac{19b}{f} = -\varepsilon, \forall \delta b$	۵
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