

الف) جواب $\left\{ \mathbb{R} - \left\{ 1, -3, \frac{1}{2} \right\} \right\}$

$$\frac{x+3}{2x^3+3x^2-8x+3} = \frac{x+3}{(x-1)(2x^2+5x-3)} \Rightarrow \Delta = 25+24=49 \rightarrow \frac{-5 \pm \sqrt{49}}{4} = \left(-3, \frac{1}{2} \right)$$

تجزیه ضرایب

ب) جواب $\left\{ \mathbb{R} - \left\{ -3, -\frac{1}{2}, -1 \right\} \right\}$

$$\frac{x+3}{2x^3+9x^2+10x+3} = \frac{x+3}{(x+1)(2x^2+7x+3)} \Rightarrow \Delta = 49-24=25 \rightarrow \frac{-7 \pm \sqrt{25}}{4} = \left(-3, -\frac{1}{2} \right)$$

تجزیه ضرایب

الف) $\mathbb{R} - \{1\}$ جمع ضرایب منفرجه یعنی $x-1$

$$\frac{x+3}{x^3-2x^2+2x-1} = \frac{x+3}{(x-1)(x^2-x+1)} \Rightarrow \Delta = 1-4 = -3$$

بدون ریشه

جواب $(-\infty, -3] \cup (1, +\infty)$

$$\sqrt{\frac{x+3}{x^3-2x^2+2x-1}} \geq 0 \Rightarrow \frac{x+3}{(x-1)(x^2-x+1)} \geq 0 \Rightarrow \frac{-3}{+ \frac{1}{4} - \frac{1}{4} +} \rightarrow$$

بدون ریشه

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$$x^2-5x+10 \neq 0 \rightarrow (x-2)(x-5) \neq 0 \Rightarrow \mathbb{R} - \{2, 5\}$$

$$x^2+3x \neq 0 \rightarrow x(x+3) \neq 0 \Rightarrow \mathbb{R} - \{0, -3\}$$

جمع نبی $\rightarrow \mathbb{R} - \{-3, 0, 2, 5\}$ جواب خاصی

الف) $y = \sqrt{-x} - 2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow (-\infty, -2]$

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$$y = \frac{5x^2+9}{[x^2]-2[x]-3} \neq 0 \Rightarrow ([x]-3)([x]+1) \neq 0$$

جواب خاصی $\mathbb{R} - [3, 4) \cup [-1, 0)$

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$$\sqrt{\left[x - \frac{1}{4}\right] + \left[x + \frac{2}{4}\right]} \geq 0 \Rightarrow \left[x - \frac{1}{4}\right] + \left[x - \frac{1}{4}\right] + 1 \geq 0 \Rightarrow 2\left[x - \frac{1}{4}\right] \geq -1 \Rightarrow \left[x - \frac{1}{4}\right] \geq -\frac{1}{2}$$

بزرگی $\left\{ x \mid x = k + \frac{1}{4}, k \in \mathbb{Z} \right\}$

قرینه $\sqrt{\left[x - \frac{1}{4}\right] + \left[\frac{1}{4} - x\right]} \geq 0 \rightarrow [x] + [-x] \geq 0$

$$\frac{\cos x + 1}{\tan x + 1} \neq 0 \rightarrow \tan x \neq -1 \quad \text{130} \quad \tan x = -1 \quad \left[\mathbb{R} - \left\{ k\pi + \frac{3\pi}{2} \right\} \right] \leftarrow \text{جواب}$$

$$y: \sqrt{1 - f \sin^2 x} \geq 0 \rightarrow \sin^2 x \geq \frac{1}{f} \rightarrow \frac{1}{f} \leq \sin^2 x \leq \frac{1}{f} \quad \text{100} \quad \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right] \leftarrow \text{جواب}$$

$$y: \sqrt{f \sin x - 1} \geq 0 \rightarrow f \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{f} \quad \text{150} \quad \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4} \right] \leftarrow \text{جواب}$$

$$y: \sqrt{1 - f \cos x} \geq 0 \rightarrow f \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{f} \quad \left[\mathbb{R} - \left(2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4} \right) \right] \leftarrow \text{جواب}$$

$$y = \arcsin(x^2 + 3x + 1) \rightarrow -1 \leq x^2 + 3x + 1 \leq 1 \rightarrow x^2 + 3x \leq 0 \quad \frac{-3 \pm \sqrt{9 - 4}}{2} = \frac{-3 \pm \sqrt{5}}{2} \quad [-\frac{3}{2}, 0] \leftarrow \text{جواب}$$

$$-1 \leq x^2 + 3x + 1 \rightarrow x^2 + 3x + 2 \geq 0 \quad \frac{-3 \pm \sqrt{9 - 4}}{2} = \frac{-3 \pm \sqrt{5}}{2} \quad (-\infty, -2] \cup [-1, +\infty) \leftarrow \text{جواب}$$

$$\cos y = \sqrt{5 - 2x} \quad -1 \leq \sqrt{5 - 2x} \leq 1 \rightarrow 5 - 2x \leq 1 \rightarrow x \geq 2 \quad \left[-\frac{3}{2}, -2 \right] \cup [0, 4] \leftarrow \text{جواب}$$

$$5 - 2x \geq 0 \rightarrow 2x \leq 5 \rightarrow x \leq \frac{5}{2} \quad \left[2, \frac{5}{2} \right] \leftarrow \text{جواب}$$

$$\log_y(1 - \log_x^2) \rightarrow 1 - \log_x^2 > 0 \rightarrow \log_x^2 < 1 \rightarrow x < 3 \quad (0, 3) \leftarrow \text{جواب}$$

$$\log_y(1 - \log_{\frac{1}{f}}^2) \rightarrow 1 - \log_{\frac{1}{f}}^2 > 0 \rightarrow \log_{\frac{1}{f}}^2 < 1 \rightarrow x > \frac{1}{f} \quad \left(\frac{1}{f}, +\infty \right) \leftarrow \text{جواب}$$

$$y: \sqrt{f x - x^2} \geq 0 \rightarrow f x - x^2 \geq 0 \rightarrow x(f - x) \geq 0 \rightarrow x^2 - f x + 3 \leq 0 \rightarrow (x - 1)(x - 3) \leq 0 \quad \frac{1 \pm \sqrt{1 - 12}}{2} \rightarrow [1, 3] \leftarrow \text{جواب}$$

$$y: \left(\frac{f x + \omega}{f x + f} \right)! \rightarrow \frac{f x + \omega}{f x + f} \in \omega! \rightarrow f x + \omega \in f x \omega! + f \omega! \rightarrow f x - f x \omega! \in f \omega! - \omega$$

$$x(f - f \omega!) \in f \omega! - \omega \rightarrow x \in \frac{f \omega! - \omega}{f - f \omega!} \rightarrow \left\{ x \mid x = \frac{f k - \omega}{f - f k}, k \in \omega! \right\}$$