

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۳ کلاس: روزانه

ریشه اصلی: $x^2 + x + 2, yx - y \Rightarrow x^2 + (1-y)x + 2 + y = 0$

$\Delta \geq 0 \Rightarrow (1-y)^2 - 4(2+y) \geq 0 \Rightarrow 1 + y^2 - 2y - 8 - 4y \geq 0$

$y^2 - 6y - 7 \geq 0 \Rightarrow y \leq -1 \text{ یا } y \geq 7 \Rightarrow R_1(-\infty, -1] \cup [7, +\infty)$

الف) $a > 0 \rightarrow \min$
 $s/x \rightarrow -\frac{b}{a} = -\frac{5}{4}$
 $s/y \rightarrow -\frac{1}{1}$

$[-\frac{1}{1}, +\infty)$

ب) $a < 0 \rightarrow \max$
 $s/x \rightarrow \frac{3}{3} = 1$
 $s/y \rightarrow -\frac{2}{1} = -2$

$[0, 2]$

ج) $a \rightarrow R$
 $s/x \rightarrow +$

$[0, +\infty)$

د) $\log(0)$

$\mathbb{R}$

الف) $R - \{ \frac{3}{2} \}$
 $\Rightarrow R - \{ \frac{3}{2} \}$

ب) $y^2 \leq \frac{x+1}{x-2}$
 $\Rightarrow x \leq \frac{y^2+1}{y^2-4}$
 $\Rightarrow y \neq \pm 2, y \geq 0$
 $[0, 2) \cup (2, +\infty)$

ج) $\min \frac{x^2+3+1}{\sqrt{x^2+3}}$
 $\Rightarrow \sqrt{x^2+3} \geq 1$
 $[1, +\infty)$

د) $\frac{1}{\sqrt{x^2+3}}$
 $\Rightarrow \frac{1}{\sqrt{x^2+3}} \leq \frac{1}{\sqrt{4}}$
 $[1, +\infty)$

ریشه اصلی:

$x^2, \frac{y+4}{y-3} \Rightarrow R_1(-\infty, -4) \cup (3, +\infty)$

$x = \sqrt{\frac{y+4}{y-3}} \geq 0 \Rightarrow \frac{-4}{y-3} \geq 0 \Rightarrow y \leq 3$

$\min x^2 = 0$
 $\max x^2 = +\infty$
 $(-\infty, -4) \cup (3, +\infty)$
 $x^2 = \frac{y+4}{y-3} \rightarrow y \neq 3$

ریشه اصلی: $\sin x, \frac{-3y-1}{y-2}$

$-1 \leq \sin x \leq 1 \Rightarrow -1 \leq \frac{-3y-1}{y-2} \Rightarrow 0 \leq \frac{-2y-3}{y-2}$

$-1 \leq \sin x \leq 1 \Rightarrow \frac{-3y-1}{y-2} \leq 1 \Rightarrow \frac{-4y+1}{y-2} \leq 1 \Rightarrow \frac{1}{y-2} \leq 0 \Rightarrow y \leq 2$
 $[-\frac{1}{2}, \frac{1}{4}]$

صورتی شد $\min \sin x = -1 \rightarrow -\frac{3}{2}$
 $\max \sin x = 1 \rightarrow \frac{1}{4}$
 $[-\frac{3}{2}, \frac{1}{4}]$

$$D_f: \mathbb{R} - \{ \text{نقطه منقطع} \} \Rightarrow D_f: \mathbb{R} \quad \checkmark$$

$$u^2 - u + 1 \rightarrow \text{تبدیل}$$

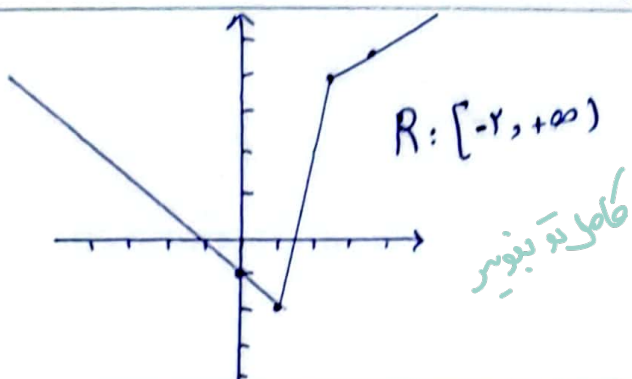
$$x \in \mathbb{R}: y = \frac{(u - \frac{1}{4})^2 + 0}{(u - \frac{1}{4})^2 + \frac{3}{4}} \rightarrow (u - \frac{1}{4})^2 = \frac{3}{4}y \quad \checkmark$$

صفر، سه یا منفی

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

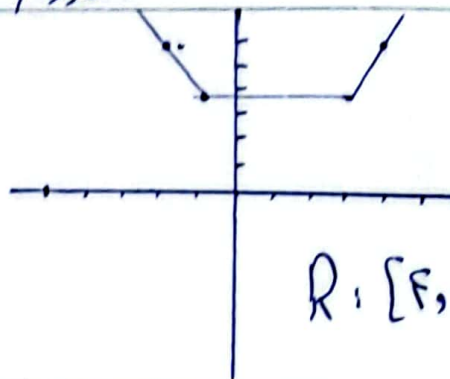
۲

۶



$$R: [-2, +\infty)$$

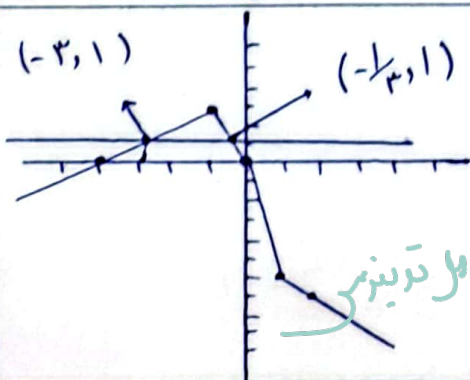
کامل تدبیر



$$R: [2, +\infty)$$

۱, ۷۵

۷



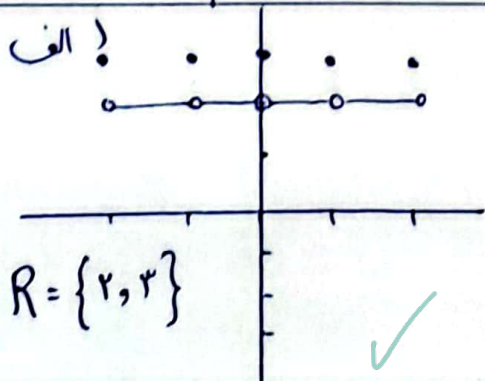
$$D_f: \leftarrow \frac{1}{2} \rightarrow$$

$$(-\infty, -2] \cup [-\frac{1}{2}, +\infty)$$

کامل تدبیر

۱, ۷۵

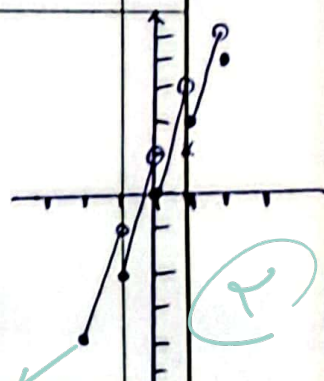
۸



$$R = \{2, 3\}$$

✓

$$\begin{aligned} 3x - [x] \\ -2 \leq x < -1 &\rightarrow 3x + 2 \quad \left| \begin{array}{c} -2 \\ -1 \end{array} \right| \\ -1 \leq x < 0 &\rightarrow 3x + 1 \quad \left| \begin{array}{c} -1 \\ 0 \end{array} \right| \\ 0 \leq x < 1 &\rightarrow 3x \quad \left| \begin{array}{c} 0 \\ 1 \end{array} \right| \\ 1 \leq x < 2 &\rightarrow 3x - 1 \quad \left| \begin{array}{c} 1 \\ 2 \end{array} \right| \\ 2 &\rightarrow 3x - 2 \quad \left| \begin{array}{c} 2 \\ 3 \end{array} \right| \end{aligned}$$



۲

$$\sin u = t \quad \star \quad \text{محدود} \quad [-1, 1]$$

$$\rightarrow t^2 - t + 1 = y$$

$$t = -\frac{1}{2} = \frac{1}{4} \rightarrow \frac{1}{4} - \frac{1}{2} + 1 = \frac{3}{4}$$

$$\Rightarrow R_f: [\frac{3}{4}, 3]$$

$$t = \sin u$$

$$y = t^2 - t + 1$$

$$t = -\frac{1}{2} \quad \left| \begin{array}{c} 0 \\ 1 \end{array} \right|$$

$$\Rightarrow R_f: [1, 3]$$

۱۰

۲