

نام و نام خانوادگی: آریین حبیب اللہی پاسخامه تشریحی تکلیف شماره ۳ کلاس ۳ دراز درجہ سیرانہ (شعبہ)

$$y = \frac{x^2 + x + 2}{x - 1}$$

$$1 + y^2 - 2y - 4y - 1 \geq 0$$

$$\text{If } x \neq 1 \quad y = (-\infty, -1] \cup (1, +\infty)$$

$$x^2 + x(1-y) + 2+y = 0 \quad y^2 - 4y - 1 \geq 0$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{y-1 \pm \sqrt{(1-y)^2 - 4(2+y)}}{2}$$

$$\frac{-1}{+} \quad \frac{1}{-}$$

$$\text{الف) } y = \frac{-1}{1} \quad 2x^2 - 5x + 1 = y$$

$$x = \frac{-b}{2a} = \frac{5}{4} \quad R_{f(x)} = [-\frac{1}{4}, +\infty)$$

$$\text{ج) } y = \sqrt{x^2 - 3x + 4} + x + 1 \rightarrow \text{بر چند جمله ای } R = \text{ زیر رادیکال}$$

$$y = \log(x^2 - 4x^2 + 7x + 4)$$

$$R = \text{ اگر } \log \text{ بگیریم}$$

$$R = R_{f(x)} = R$$

$$\text{ب) } y = \sqrt{-x^2 + 2x - 5}$$

$$x = \frac{-b}{2a} = \frac{2}{4} = \frac{1}{2}$$

$$a < 0 \quad \frac{-\Delta}{4a} = \frac{4-20}{4} = -\frac{3}{2}$$

$$\text{الف) } y = \frac{3x+1}{2x-4}$$

$$R = \left\{ \frac{9}{2} \right\}$$

$$y = \sqrt{\frac{4x+1}{x-2}}$$

$$R = \left\{ \frac{4}{3} \right\}$$

$$y = x^2 + \frac{1}{x^2 + 4}$$

$$y = \frac{3x^2 + 4}{x^2 - 1} \Rightarrow x^2 = \frac{y+4}{y-3}$$

$$x = \pm \sqrt{\frac{y+4}{y-3}}$$

$$y = \frac{3x^2}{x^2} = 3$$

$$y = \frac{2 \sin x - 1}{\sin x + 3}$$

$$y = \frac{-3y-1}{y-2} = \sin x$$

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$$y = x^2 - x + \frac{1}{x} \Rightarrow x^2 y - xy + y = x^2 - x + \frac{1}{x}$$

$$x = \pm \Delta - b$$

$\Delta = \sqrt{(1-y)^2 - 4(1-y)(\frac{1}{x}-y)}$
 $y^2 - 2y + 1 - 1 + 4y^2 + 4y = -3y^2 + 3y$
 $y = 1 \Rightarrow \frac{1}{x} - 1 = 0$
 $y \neq 1 \Rightarrow -3y^2 + 3y \geq 0$
 $3y(1-y) \geq 0 \Rightarrow [0, 1]$

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الف) $-x-1 \mid x-2 \mid x+1$
 $R_{f(x)} = [-2, +\infty)$
 ب) $|x-2| + |x+1|$
 $R = [-2, +\infty)$

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$-1 \mid 2$
 $x+2 \mid -3x \mid -x-2$
 $|x-2| - |2x+2| \leq 1$
 $R = (-\infty, -\frac{1}{3})$

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الف) $[x] + [y-x] \rightarrow [x] + [-x] + 3$
 ب) $(-1, -1) \rightarrow 3x+2$
 $(-1, 0) \rightarrow 4x+1$
 $(0, 1) \rightarrow 3x$
 $(1, 2) \rightarrow 3x-1$
 $(2, 3) \rightarrow 3x-2$
 If $x \in \mathbb{Z} = 3 \rightarrow z = -1, 0, 1, 2$
 If $x \notin \mathbb{Z} = 2 \rightarrow R = \{2, 3\}$
 $R = [-4, 5)$

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الف) $\sin^2 x - \sin x + 1$
 $y = 1 \Rightarrow \sin x = 1 \Rightarrow x = \frac{\pi}{2}$
 $y = 3 \Rightarrow \sin x = -1 \Rightarrow x = \frac{3\pi}{2}$
 $\frac{-b}{2a} = \frac{1}{2} \Rightarrow f(\frac{1}{2}) = \frac{3}{4} \rightarrow \min \Pi$
 ب) $\sin^2 x + \sin^2 x + 1$
 $\sin^2 x = 1 \Rightarrow y = 3 \Rightarrow x = \frac{\pi}{2}$
 $\frac{-b}{2a} = \frac{-1}{2} \Rightarrow f(\frac{1}{2}) = \frac{1+1+1}{4} = \frac{3}{4} \Rightarrow \sin^2 x = 0 \Rightarrow y = 1 \Rightarrow x = 0$
 $\Pi \cap \Pi \cap \Pi = [\frac{3}{4}, 3]$
 $\Pi \cap \Pi \cap \Pi = [1, 3]$

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