

۱۵/۵

تاریخ زحرا شفیق دوم دختر A تکلیف سری ۹

۱) $y = x^2 - 5x + 2 \rightarrow x^2 - 5x + 2 = 0 \rightarrow x = \frac{5 \pm \sqrt{25 - 4 \cdot 1 \cdot 2}}{2 \cdot 1} = \frac{5 \pm \sqrt{9}}{2} = \frac{5 \pm 3}{2}$
 $\rightarrow x = 4 \text{ or } x = 1$
 $\rightarrow y = 4^2 - 5 \cdot 4 + 2 = -2$
 $\rightarrow y = 1^2 - 5 \cdot 1 + 2 = -2$
 $\rightarrow R = \{-2\}$

سوال ۱

۲) $y = x^2 - 4x + 2 \rightarrow x^2 - 4x + 2 = 0 \rightarrow x = \frac{4 \pm \sqrt{16 - 4 \cdot 1 \cdot 2}}{2 \cdot 1} = \frac{4 \pm \sqrt{8}}{2} = \frac{4 \pm 2\sqrt{2}}{2} = 2 \pm \sqrt{2}$
 $\rightarrow y = (2 + \sqrt{2})^2 - 4(2 + \sqrt{2}) + 2 = 2 - 2\sqrt{2}$
 $\rightarrow y = (2 - \sqrt{2})^2 - 4(2 - \sqrt{2}) + 2 = 2 + 2\sqrt{2}$
 $\rightarrow R = [2 - 2\sqrt{2}, 2 + 2\sqrt{2}]$

سوال ۲

۳) $y = x^2 - 2x + 1 \rightarrow x^2 - 2x + 1 = 0 \rightarrow x = \frac{2 \pm \sqrt{4 - 4 \cdot 1 \cdot 1}}{2 \cdot 1} = \frac{2 \pm 0}{2} = 1$
 $\rightarrow y = 1^2 - 2 \cdot 1 + 1 = 0$
 $\rightarrow R = \{0\}$

۴) $y = x^2 - 3x + 2 \rightarrow x^2 - 3x + 2 = 0 \rightarrow x = \frac{3 \pm \sqrt{9 - 4 \cdot 1 \cdot 2}}{2 \cdot 1} = \frac{3 \pm 1}{2} = 2 \text{ or } 1$
 $\rightarrow y = 2^2 - 3 \cdot 2 + 2 = 0$
 $\rightarrow y = 1^2 - 3 \cdot 1 + 2 = 0$
 $\rightarrow R = \{0\}$

سوال ۳

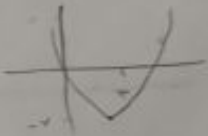
۵) $y = \frac{x^2 + 1}{x^2 - 2} \rightarrow y(x^2 - 2) = x^2 + 1 \rightarrow yx^2 - 2y = x^2 + 1 \rightarrow (y - 1)x^2 = 2y + 1$
 $\Rightarrow x^2 = \frac{2y + 1}{y - 1}$
 $\Rightarrow x = \pm \sqrt{\frac{2y + 1}{y - 1}}$
 $\Rightarrow R = (-\infty, -\frac{1}{2}] \cup (\frac{1}{2}, \infty)$

سوال ۴

۶) $y = \frac{1}{x^2 - 2x} \rightarrow x^2 - 2x = \frac{1}{y} \rightarrow x^2 - 2x - \frac{1}{y} = 0 \rightarrow x = \frac{2 \pm \sqrt{4 + \frac{4}{y}}}{2} = 1 \pm \sqrt{1 + \frac{1}{y}}$
 $\Rightarrow R = (-\infty, -\frac{1}{2}] \cup [\frac{1}{2}, \infty)$

سوال ۵

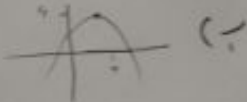
۷) $y = x^2 - 4x + 2 \rightarrow x^2 - 4x + 2 = 0 \rightarrow x = \frac{4 \pm \sqrt{16 - 4 \cdot 1 \cdot 2}}{2 \cdot 1} = \frac{4 \pm \sqrt{8}}{2} = 2 \pm \sqrt{2}$
 $\rightarrow y = (2 + \sqrt{2})^2 - 4(2 + \sqrt{2}) + 2 = 2 - 2\sqrt{2}$
 $\rightarrow y = (2 - \sqrt{2})^2 - 4(2 - \sqrt{2}) + 2 = 2 + 2\sqrt{2}$
 $\rightarrow R = [2 - 2\sqrt{2}, 2 + 2\sqrt{2}]$



الف

سوال ۶

۸) $y = -x^2 - 4x + 2 \rightarrow -x^2 - 4x + 2 = 0 \rightarrow x^2 + 4x - 2 = 0 \rightarrow x = \frac{-4 \pm \sqrt{16 + 4 \cdot 1 \cdot 2}}{2 \cdot 1} = \frac{-4 \pm \sqrt{24}}{2} = -2 \pm \sqrt{6}$
 $\rightarrow y = -(-2 + \sqrt{6})^2 - 4(-2 + \sqrt{6}) + 2 = -2 + 2\sqrt{6}$
 $\rightarrow y = -(-2 - \sqrt{6})^2 - 4(-2 - \sqrt{6}) + 2 = -2 - 2\sqrt{6}$
 $\rightarrow R = [-2 - 2\sqrt{6}, -2 + 2\sqrt{6}]$



ب

سوال ۷

۹) $y = \sqrt{x^2 - 4x + 2} \rightarrow y^2 = x^2 - 4x + 2 \rightarrow x^2 - 4x + 2 - y^2 = 0 \rightarrow x = \frac{4 \pm \sqrt{16 - 4(2 - y^2)}}{2} = 2 \pm \sqrt{1 - y^2}$
 $\Rightarrow R = [0, \infty)$

سوال ۸

۱۰) $y = \sqrt{x^2 + 4x + 1} \rightarrow y^2 = x^2 + 4x + 1 \rightarrow x^2 + 4x + 1 - y^2 = 0 \rightarrow x = \frac{-4 \pm \sqrt{16 - 4(1 - y^2)}}{2} = -2 \pm \sqrt{1 - y^2}$
 $\Rightarrow R = [0, \infty)$

سوال ۹

۱۱) $y = x^2 + 4x + 1 \rightarrow x^2 + 4x + 1 = 0 \rightarrow x = \frac{-4 \pm \sqrt{16 - 4 \cdot 1 \cdot 1}}{2 \cdot 1} = \frac{-4 \pm \sqrt{12}}{2} = -2 \pm \sqrt{3}$
 $\rightarrow y = (-2 + \sqrt{3})^2 + 4(-2 + \sqrt{3}) + 1 = -2 + 2\sqrt{3}$
 $\rightarrow y = (-2 - \sqrt{3})^2 + 4(-2 - \sqrt{3}) + 1 = -2 - 2\sqrt{3}$
 $\rightarrow R = [-2 - 2\sqrt{3}, -2 + 2\sqrt{3}]$

سوال ۱۰

۱۲) $y = \sqrt{x^2 + 4x + 1} \rightarrow y^2 = x^2 + 4x + 1 \rightarrow x^2 + 4x + 1 - y^2 = 0 \rightarrow x = \frac{-4 \pm \sqrt{16 - 4(1 - y^2)}}{2} = -2 \pm \sqrt{1 - y^2}$
 $\Rightarrow R = [0, \infty)$

سوال ۵

الف) $y = \frac{3x-1}{x-2} \rightarrow R = (-\infty, 2) \cup (2, \infty)$

ب) $y = \sqrt{\frac{x+1}{x+3}} \rightarrow R = [-1, \infty) \cup \{ \frac{2}{3} \}$

الف) $y = \frac{3x-1}{x-2}$ مخرج ۲
مخرج ۳
 $x=0 \rightarrow y = -\frac{1}{2}$

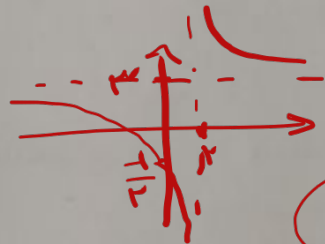
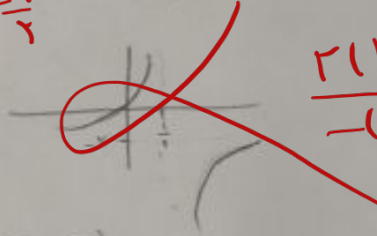
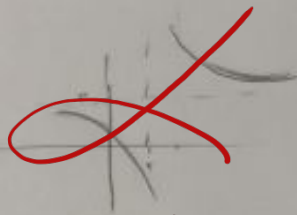
ب) $y = \frac{x-2}{1-2x}$ مخرج ۱/۲
مخرج ۲

مخرج ۱/۲ نیست

الف) $y = \cos x = \frac{1}{\cos^2 x} \rightarrow R = (1, \infty)$

ب) $y = \sqrt{\frac{x^2+1}{x}} \rightarrow R = (-\infty, -1] \cup [1, \infty)$

$x \geq 0 \rightarrow (\sqrt{x^2+1}, \infty)$
 $x < 0 \rightarrow (-\infty, \sqrt{x^2+1})$



سوال ۶

۵/۱

سوال ۱

$\frac{2(2x-1)}{-(2x-1)} = -2$