

سوال 1
 (الف) $y = x^2 - 5x + 2 \rightarrow x^2 - 5x + 2 = 0 \rightarrow x = \frac{5 \pm \sqrt{25 - 4}}{2} = \frac{5 \pm \sqrt{21}}{2}$
 $R = [5, \infty)$
 (ب) $y = x^2 + 1 \rightarrow x^2 + 1 = 0 \rightarrow x = \pm i$
 $R = \emptyset$

سوال 2
 (الف) $y = x^2 - 4x + 2 \rightarrow (x-2)^2 - 2 = 0 \rightarrow (x-2)^2 = 2 \rightarrow x-2 = \pm \sqrt{2} \rightarrow x = 2 \pm \sqrt{2}$
 $R_2 = [2, \infty)$
 سوال 3
 (ب) $y = x^2 - 5x + 1 \rightarrow x^2 - 5x + 1 = 0 \rightarrow x = \frac{5 \pm \sqrt{25 - 4}}{2} = \frac{5 \pm \sqrt{21}}{2}$
 $R = [\frac{5 + \sqrt{21}}{2}, \infty)$

سوال 3
 (الف) $y = \frac{x^2 + 3}{x^2 - 2} \rightarrow x^2 y = x^2 + 3 \rightarrow x^2 y - x^2 = 3 \rightarrow x^2 (y-1) = 3 \rightarrow x^2 = \frac{3}{y-1}$
 $x = \pm \sqrt{\frac{3}{y-1}}$
 $R = (-\infty, \frac{1}{2}] \cup (1, \infty)$

سوال 4
 (ب) $y = \frac{2|x| + 1}{|x| - 2} \rightarrow y(|x| - 2) = 2|x| + 1 \rightarrow y|x| - 2y = 2|x| + 1 \rightarrow y|x| - 2|x| = 2y + 1$
 $|x|(y-2) = 2y + 1 \rightarrow |x| = \frac{2y+1}{y-2}$
 $R = (-\infty, \frac{1}{2}] \cup (2, \infty)$

سوال 5
 (الف) $y = \frac{1}{x^2 - 4x} \rightarrow x^2 y - 4xy - 1 = 0 \rightarrow x = \frac{4y \pm \sqrt{16y^2 + 4y}}{2y} = \frac{4y \pm 2\sqrt{4y^2 + y}}{2y} = \frac{2y \pm \sqrt{4y^2 + y}}{y}$
 $R = (-\infty, -\frac{1}{2}] \cup [1, \infty)$

سوال 6
 (الف) $y = x^2 - 4x + 2 \rightarrow x = \frac{4 \pm \sqrt{16 - 4}}{2} = \frac{4 \pm \sqrt{12}}{2} = 2 \pm \sqrt{3}$
 $R = [-\sqrt{3}, \infty)$

سوال 7
 (ب) $y = -x^2 + 4x + 2 \rightarrow x = \frac{4 \pm \sqrt{16 - 4(-1)(2)}}{2(-1)} = \frac{4 \pm \sqrt{20}}{-2} = \frac{4 \pm 2\sqrt{5}}{-2} = -2 \pm \sqrt{5}$
 $R = (-\infty, 2 + \sqrt{5}]$

سوال 8
 (الف) $\sqrt{x^2 - 4x + 2} \rightarrow x^2 - 4x + 2 \geq 0 \rightarrow x \in (-\infty, 0] \cup [2, \infty)$

سوال 9
 (ب) $\sqrt{-x^2 + 4x + 1} \rightarrow -x^2 + 4x + 1 \geq 0 \rightarrow x \in [1, 5]$

سوال 10
 (الف) $y = x^3 + 3x^2 + 2x + 1 \rightarrow R$

سوال 11
 (ب) $y = \sqrt{x^3 + 4x^2 + 1} \rightarrow R = [0, \infty)$

الف) $y = \frac{3x+1}{x-2} \rightarrow R = \mathbb{R} - \{2\}$

ب) $y = \sqrt{\frac{1-x}{x+3}}$ $R = [0, \infty) - \{2\}$

الف) $y = \frac{3x+1}{x-2}$
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مخرج = ۲



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



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

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