

الف)  $y = x^2 - 2x^2 + 2x \rightarrow y = (x-1)^2 + 1 \rightarrow (x-1)^2 = y-1$

$\rightarrow x = \sqrt{y-1} \pm 1 \quad R = \mathbb{R}$

ب)  $x^2 - 2xy + y^2 - 1 = 0 \rightarrow (y-x)^2 - 1 = 0 \rightarrow y-x = \pm 1 \rightarrow y = x \pm 1$

$R = (-\infty, -1] \cup [0, +\infty)$

صواب در سوال ۳

هم این راه حل را هم راه حل در سوال ۳

الف)  $\frac{\Delta}{\Delta a} \rightarrow \frac{1}{2} \quad \text{دارد Min} \rightarrow [1, +\infty) = R$

ب)  $\frac{\Delta}{\Delta a} \rightarrow \frac{-2a}{-2} = a \quad \text{دارد Max} \rightarrow (-\infty, 12] = R$

ج)  $\frac{\Delta}{\Delta a} \rightarrow \frac{-2a}{2} = -a \quad \text{دارد Min} \rightarrow [-1, +\infty) \rightarrow [0, +\infty) = R$

د)  $\frac{\Delta}{\Delta a} \rightarrow \frac{-2a}{-2} = a \quad \text{دارد Max} \rightarrow (-\infty, 9] \rightarrow [0, 3] = R$

الف)  $\mathbb{R} = R$

ب)  $R = \mathbb{R}$

ج)  $\sqrt{\mathbb{R}} \rightarrow R = [0, +\infty)$

د)  $(\mathbb{R})^2 \rightarrow [0, +\infty)$

سوال ۱ قسمت ب)  $y = \frac{1}{x^2 - 2x + 1} \rightarrow y = \frac{1}{(x-1)^2 + 1}$

$\rightarrow y(x-1)^2 - y = 1 \rightarrow$

$(x-1)^2 = \frac{y+1}{y} \rightarrow x-1 = \sqrt{\frac{y+1}{y}}$

$\frac{-1}{+1} \rightarrow R = (-\infty, -1] \cup (0, +\infty)$

الف)  $a = 2, b = 1, c = 1, d = -2 \rightarrow R = \mathbb{R} - \{3\}$

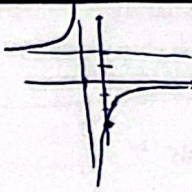
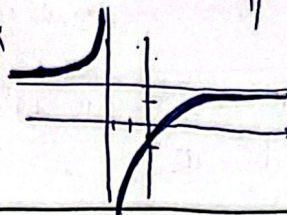
ب)  $a = 2, b = 1, c = 1, d = 1 \rightarrow R = \mathbb{R} - \{2\}$

الف)  $a = 1, b = 2, c = 1, d = 1 \rightarrow \sqrt{\mathbb{R} - \{2\}} \rightarrow R = [0, +\infty) - \{1, 2\}$

ب)  $a = 3, b = 1, c = 1, d = 1 \rightarrow \sqrt{\mathbb{R} - \{2\}} \rightarrow R = [0, +\infty)$

الف)  $x = -\frac{d}{c} \rightarrow -1$   $y = \frac{a}{c} \rightarrow 2$   
 حرف  $\rightarrow (0, -3)$

ب)  $x = -\frac{d}{c} \rightarrow -2$   $y = \frac{a}{c} \rightarrow 2$   
 حرف  $\rightarrow (0, -\frac{1}{5})$

الف)  $\sin x = a \rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$

ب)  $x^2 = a \rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$

ج)  $R_f = (-\infty, -2] \cup [2, +\infty)$   $\sqrt[n]{n} + \frac{1}{\sqrt[n]{n}}$

د)  $\sqrt{x} = a \rightarrow [2, +\infty) = R_f$

الف)  $\rightarrow R_f = [\frac{1}{2}, +\infty) \rightarrow t + \frac{1}{t+2} \rightarrow t \rightarrow [0, +\infty)$   
 $\cdot a \rightarrow 0 + \frac{1}{2} \rightarrow R_f = [\frac{1}{2}, +\infty)$

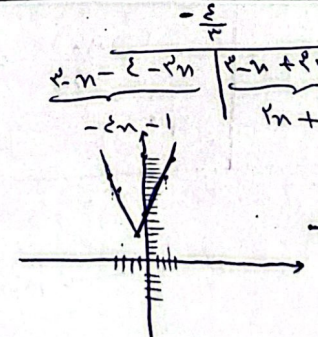
ب)  $\sqrt{x^2+2} + \frac{1}{\sqrt{x^2+2}} \rightarrow R_f = [\frac{2}{\sqrt{2}}, +\infty)$   
 $x^2 \rightarrow [0, +\infty)$

$y = |x-3| + |x+2|$

(3, 13) (-2, 11)  
 $(-\frac{5}{2}, \frac{13}{2})$  (-2, 10)  
 (2, 14)  
 (0, 7)

$(-\frac{5}{2}, \frac{13}{2})$

$\rightarrow R = [\frac{1}{2}, +\infty)$



الف)  $R = [2, +\infty)$

ب)  $R = [-2, +\infty)$

(2, 2) (0, 4) (-1, 5) (2, 4) (-2, 4)

(-2, 0) (-1, 2) (2, -1)  
 (0, 1) (1, -2)

