

الف) $(x-3)^2 - 9 + 1 = 0 \rightarrow (x-3)^2 = 1 \rightarrow x-3 = \pm 1$ $x = \boxed{2}$
 $x = \boxed{4}$

ب) $x^2 + 8x + 16 = -9 + 16 \rightarrow (x+4)^2 = 9 \rightarrow x+4 = \pm 3$ $x = \boxed{-1}$
 $x = \boxed{-7}$

الف) $(x-2)(x-3) = 0$ $x = \boxed{2}$ $x = \boxed{3}$

ب) $(x-7)(x+2) = 0$ $x = \boxed{7}$ $x = \boxed{-2}$

الف) $\Delta \rightarrow 9 - (-20) = 29$ $x = \frac{3 \pm \sqrt{29}}{2}$

ب) $\Delta \rightarrow 16 - 4 = 12$ $x = \frac{4 \pm \sqrt{12}}{4} = 1 \pm \frac{\sqrt{3}}{2}$
 $x = \frac{\sqrt{2}(\sqrt{2} \pm \sqrt{3})}{2} = \frac{\sqrt{2} \pm \sqrt{6}}{2}$

الف) $(x-1)(x-2) = 0$ $x = \boxed{1}$ $x = \boxed{2}$

ب) $(x-3)(x+1) = 0$ $x = \boxed{\frac{3}{4}}$ $x = \boxed{-1}$

الف) $x^2 - 12x + 35 = 0$ $(x-5)(x-7) = 0$ $\begin{cases} \frac{x}{5} = \boxed{\frac{5}{7}} \\ \frac{5}{5} = \boxed{1} \end{cases}$

ب) $x^2 - 10x + 21 = 0$ $(x-3)(x-7) = 0$ $\begin{cases} \frac{x}{3} = \boxed{1} \\ \frac{7}{3} = \boxed{\frac{7}{3}} \end{cases}$

$$2, 3 \text{ ریشه حقیقی} \quad \Delta \rightarrow 25 - 12 = 13 > 0 \quad (\text{الف})$$

$$\text{فاقد ریشه} \quad \Delta \rightarrow 1 - 14 = -13 < 0 \quad (\text{ب})$$

$$\text{یک ریشه} \quad \Delta \rightarrow 14 - 14 = 0 \quad (\text{ج})$$

$$\text{فاقد ریشه} \quad \Delta \rightarrow 1 - 1 = -7 < 0 \quad (\text{د})$$

$$\Delta \rightarrow 9 - 1a$$

$$(\text{الف}) \quad 9 - 1a > 0 \rightarrow a < 1, 125$$

$$(\text{ب}) \quad 9 - 1a = 0 \rightarrow a = 1, 125$$

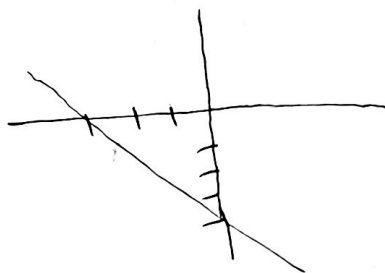
$$(\text{ج}) \quad 9 - 1a < 0 \rightarrow a > 1, 125$$

$$(\text{د}) \quad 9 - 1a \geq 0 \rightarrow a \leq 1, 125$$

(الف)

$$\min \left| \begin{array}{l} -\frac{4}{2} = -2 \\ -\frac{14}{4} = -3.5 \end{array} \right.$$

(ب)



(الف)

$$\max \left| \begin{array}{l} -\frac{4}{-2} = 2 \\ -\frac{4}{-4} = 1 \end{array} \right.$$



$$(\text{ب}) \quad x^2 + 4x + 3 = 0 \rightarrow (x-1)(x-3) = 0 \quad x=1 \quad x=3$$

$$(\text{الف}) \quad (3)^2 - 2(-2) = 9 + 4 = 13$$

$$(\text{ب}) \quad (3)^3 = -3(3)(-2) = 27 + 18 = 45$$