

الف) $x^2 - 4x + 9 = 1$

$(x-3)^2 = 1 \Rightarrow x-3 = \pm 1 \Rightarrow x = \begin{cases} x=2 \\ x=4 \end{cases}$

ب) $x^2 + 8x + 14 = 9$

$(x+4)^2 = 9 \Rightarrow x+4 = \pm 3 \Rightarrow x = \begin{cases} x=-1 \\ x=-7 \end{cases}$

الف) $\begin{matrix} \text{جمع} = 5 \\ \text{فرق} = 6 \end{matrix} \Rightarrow (x-2)(x-3) = 0 \Rightarrow x = \begin{cases} x=2 \\ x=3 \end{cases}$

ب) $\begin{matrix} \text{جمع} = 5 \\ \text{فرق} = -14 \end{matrix} \Rightarrow (x-7)(x+2) = 0 \Rightarrow x = \begin{cases} x=-2 \\ x=7 \end{cases}$

الف) $x = \frac{+3 \pm \sqrt{9+20}}{2} \Rightarrow x = \frac{3 \pm \sqrt{29}}{2}$

ب) $x = \frac{+4 \pm \sqrt{14-4}}{4} \Rightarrow x = \frac{4 \pm \sqrt{10}}{4}$

الف) $\Delta \rightarrow x = \frac{+3 \pm \sqrt{9-4}}{2} = \begin{cases} x = \frac{3+1}{2} = 2 \\ x = \frac{3-1}{2} = 1 \end{cases}$

ب) $\xrightarrow{\text{درستی}} x^2 + x - 12 = 0 \Rightarrow (x-3)(x+4) = 0 \Rightarrow \begin{cases} x = 3 \div 4 = \frac{3}{4} \\ x = -4 \div 4 = -1 \end{cases}$

الف) $x^2 - 12x + 36 = 0 \Rightarrow (x-6)(x-6) = 0 \Rightarrow \begin{cases} x = 6 \div 6 = 1 \\ x = 6 \div 6 = 1 \end{cases}$

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

$$\text{الف) } \rightarrow \Delta z (\omega)^2 - f(-3)(-1) = 13 > 0 \Rightarrow \boxed{\text{ریشه دارد}}$$

$$\rightarrow \Delta z (-1)^2 - f(2)(2) = -15 \Rightarrow \boxed{\text{ریشه ندارد}}$$

$$\rightarrow \Delta z (-2)^2 - f(2)(2) = 0 \Rightarrow \boxed{\text{ریشه مضاعف دارد}}$$

$$\rightarrow \Delta z (-1)^2 - f(2)(1) = -5 \Rightarrow \boxed{\text{ریشه ندارد}}$$

② ✓

$$\Delta z b^2 - 4ac = (3)^2 - 4(2)(a) = 9 - 1a$$

$$\text{الف) } 9 - 1a > 0 \Rightarrow \boxed{a < \frac{9}{1}}$$

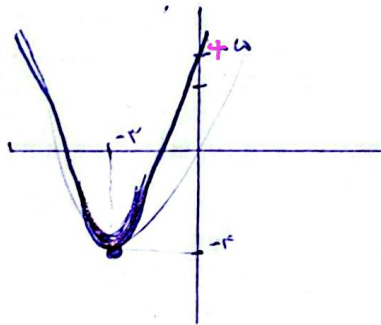
$$\rightarrow 9 - 1a \geq 0 \Rightarrow \boxed{a \leq \frac{9}{1}}$$

$$\text{ج) } 9 - 1a < 0 \Rightarrow \boxed{a > \frac{9}{1}}$$

$$\text{د) } 9 - 1a \geq 0 \Rightarrow \boxed{a \leq \frac{9}{1}}$$

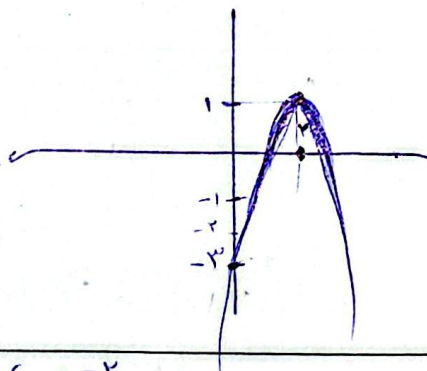
② ✓

$$\min \left| \begin{array}{l} \frac{-b}{a} = -3 \\ -f \end{array} \right.$$



② ✓

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



② ✓

$$S = \frac{-b}{a} = \frac{3}{1} = 3 \quad P = \frac{c}{a} = -2$$

$$\text{الف) } z (3)^2 - 2(-2) = 13$$

$$\rightarrow z (3)^3 - 3(3)(-2) = 45$$

② ✓