

الف) $x^2 - 6x + 9 = 1 \rightarrow (x-3)^2 = 1 \rightarrow \begin{cases} x-3=1 \rightarrow x=4 \\ x-3=-1 \rightarrow x=2 \end{cases}$ (1)

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

الف) $(x-2)(x-3)=0 \rightarrow \begin{cases} x=2 \\ x=3 \end{cases}$ (2)

ب) $(x-7)(x+2)=0 \rightarrow \begin{cases} x=7 \\ x=-2 \end{cases}$

$x = \frac{-b \pm \sqrt{\Delta}}{2a}$ $\Delta = b^2 - 4ac$ / الف) $\frac{3 \pm \sqrt{29}}{2} \rightarrow \begin{cases} x = \frac{3 + \sqrt{29}}{2} \\ x = \frac{3 - \sqrt{29}}{2} \end{cases}$ (3)

ب) $\frac{4 \pm \sqrt{12}}{4} \rightarrow \begin{cases} x = 1 + \sqrt{3} \\ x = 1 - \sqrt{3} \end{cases}$

الف) $(x-1)(x-2)=0 \rightarrow \begin{cases} x=1 \\ x=2 \end{cases}$

ب) $1-3+2=0 \rightarrow \begin{cases} x=1 \\ x=2 \end{cases}$ (4)

ب) $x^2 + x - 12 = 0 \rightarrow (x+4)(x-3)=0 \rightarrow \begin{cases} x = -\frac{4}{1} = -4 \\ x = \frac{3}{1} = 3 \end{cases}$

الف) $x^2 - 12x + 36 = 0 \rightarrow (x-6)(x-6)=0 \rightarrow \begin{cases} x = \frac{6}{1} = 6 \\ x = \frac{6}{1} = 6 \end{cases} \rightarrow x=6$ (5)

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

$\Delta = b^2 - 4ac$ / الف) $\frac{12 \pm \sqrt{144 - 4 \cdot 1 \cdot (-1)}}{2 \cdot 1} = \frac{12 \pm 12}{2} \rightarrow \begin{cases} x = \frac{12+12}{2} = 12 \\ x = \frac{12-12}{2} = 0 \end{cases}$ (6)

ب) $1 - \frac{1}{4}x^2 = -1 \rightarrow \frac{-1}{4}x^2 = -2 \rightarrow x^2 = 8 \rightarrow x = \pm 2\sqrt{2}$ ریشه ندارد

ب) $14 - \frac{1}{4}x^2 = 0 \rightarrow \frac{-1}{4}x^2 = -14 \rightarrow x^2 = 56 \rightarrow x = \pm 2\sqrt{14}$ ریشه های صحیح و مضاعف دارد.

ب) $1 - \frac{1}{4}x^2 = -1 \rightarrow \frac{-1}{4}x^2 = -2 \rightarrow x^2 = 8 \rightarrow x = \pm 2\sqrt{2}$ ریشه ندارد.

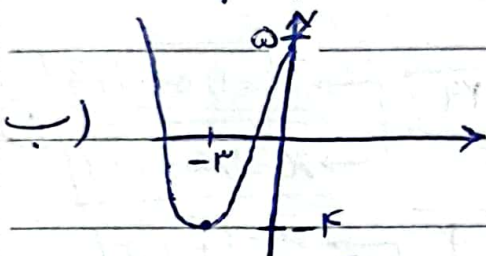
الف) $a+b+c=0 \Rightarrow 2-3+a=0 \rightarrow \boxed{a=1}$ $\begin{cases} x=1 \\ x=\frac{c}{a}=\frac{1}{2} \end{cases}$ (V)

ب) $b^2 - 4ac = 0 \rightarrow 9 - 4a = 0 \rightarrow 4a = 9 \rightarrow \boxed{a = \frac{9}{4}}$

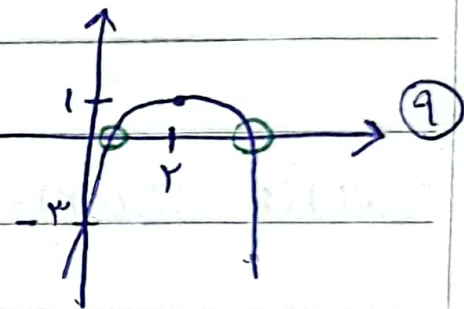
ج) $9 - 4a = -1 \rightarrow 4a = 10 \rightarrow \boxed{a = \frac{10}{4} = \frac{5}{2}}$

د) $9 - 4a = 1 \rightarrow 4a = 8 \rightarrow \boxed{a=2}$ $\quad$ $9 - 4a = 2 \rightarrow 4a = 7 \rightarrow \boxed{a = \frac{7}{4}}$

الف) Min $\left| -\frac{b}{2a} = -\frac{6}{2} = -3 \right.$ $y = 9 - 18 + 6 = -3$ (A)



الف) Max $\left| -\frac{b}{2a} = 2 \right.$ $y = -4 + 1 - 3 = -6$



ب) نقاط متخلف شبه بارز $\rightarrow -x^2 + 4x - 3 = 0$

$-(x^2 - 4x + 3) = 0$
 $-(x-1)(x-3) = 0$ $\begin{cases} x=1 \\ x=3 \end{cases}$

الف) $\left(-\frac{b}{a}\right)^2 - 2\left(\frac{c}{a}\right) = \left(-\frac{-3}{1}\right)^2 - 2\left(\frac{-2}{1}\right) = 9 + 4 = 13$ (10)

ب) $\left(-\frac{b}{a}\right)^3 - 3\left(-\frac{b}{a}\right)\left(\frac{c}{a}\right) = (3)^3 - 3(3)(-2) = 27 + 18 = 45$