

$$-\frac{\Delta}{f_a} = V \rightarrow -\frac{b^2 - f_a c}{f_a} = V \rightarrow \frac{b^2 - f(-1)(3)}{+f} = V \rightarrow b^2 = 16 \Rightarrow (b=4 \vee b=-4)$$

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الف) $f(x) = x^2 + 2x + 3 \xrightarrow{t=x^2} t^2 + 2t + 3 \Rightarrow \Delta = 4 - 4(3)(1) = -16$ $\times$ (ریشه ندارد)

ب) $f(x) = (x^2 - 1)^2 - 2(f - x^2) - 16 \xrightarrow{t=f-x^2} t^2 - 2t - 16 = (t-4)(t+4) = 0$
 $t=4 \rightarrow f-x^2=4 \rightarrow x^2=-1 \times$ $t=-4 \rightarrow x^2=f \Rightarrow x = \pm \sqrt{f}$

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$$x^2 - 16x + m = 0 \quad B = \alpha + 2 \quad \alpha + B = \frac{-(-16)}{f} \rightarrow \alpha + \alpha + 2 = f$$

$$\rightarrow \alpha = 1 \Rightarrow B = 3 \quad \frac{c}{a} = \alpha \cdot B \rightarrow \frac{m}{f} = 3 \rightarrow m = 12$$

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$$x - B = f \rightarrow B = x - f \quad x^2 - 2x + m - 1 = 0$$

$$-\frac{b}{a} = \alpha + B \rightarrow 1 = x - f \rightarrow \alpha = 1 \Rightarrow B = 0 \Rightarrow \frac{c}{a} = \frac{m-1}{3} = \alpha \cdot B$$

$$\frac{m-1}{3} = 0 \rightarrow m = 1$$

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$$-mx^2 + fx + m^2 - 1 = 0 \quad \alpha \times B = 1$$

$$\frac{m^2 - 1}{-m} = 1 \rightarrow m^2 - 1 = -m \rightarrow m^2 + m - 1 = 0 \rightarrow (m-1)(m+1) = 0$$

$$\begin{cases} m=1 \\ m=-1 \end{cases}$$

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$9x^2 - mx + 1 = 0, P = 13 \text{ و } B^2 = 1^2 \rightarrow (aB)B = 1^2 \rightarrow 1^2 B = 1 \rightarrow B = \frac{1}{1^2} \Rightarrow \psi = \frac{9}{1}$ $-\frac{b}{a} = \psi + B \rightarrow m = \frac{9}{1} + \frac{1}{1} = \frac{1^2 V + 1^2}{1^2} = \frac{1^2}{1^2}$	۶
$9x^2 - 1x + m = 0 \quad \psi = 1^2 B$ $-\frac{b}{a} = \alpha + B \rightarrow 1 = \psi + B \rightarrow 1 = 1^2 B \rightarrow \boxed{B = 1} \Rightarrow \boxed{\psi = 1^2}$ $\frac{c}{a} = \psi \times B \rightarrow \boxed{m = 1^2}$	۷
$9x^2 - 1x + 1 = 0 \quad \alpha^2 + \frac{1}{\alpha^2}$ $\Rightarrow \psi^2 - 1\alpha + 1 = 0 \xrightarrow{\pm} \alpha = \frac{1 \pm \sqrt{1 - 4}}{2} \rightarrow \psi + \frac{1}{\psi} = 1$ $\left(\psi + \frac{1}{\psi}\right)^2 = \alpha^2 + \frac{1}{\alpha^2} + 2 \times 1 \times \alpha \left(\psi + \frac{1}{\psi}\right) \rightarrow 1^2 = \alpha^2 + \frac{1}{\alpha^2} + 2 \times 1 \times 1$ $\rightarrow \alpha^2 + \frac{1}{\alpha^2} = 1$	۸
$h(t) = -10t^2 + 20t$ $\frac{dh}{dt} = y_{max} = \frac{1}{2} \frac{d^2 h}{dt^2} = \frac{1}{2} \frac{d^2}{dt^2} h_{max}$ $-10t + 20 = 0 \rightarrow t = 2 \text{ و } t = \sqrt{\frac{20}{20}} \text{ زمان بارش و رسیدن}$	۹
الف) $(n-1)^2 = 2n+1 \rightarrow$ ب) $9x^2 + 4x = n+2$	۱۰

