

$$\frac{-D}{Ea} = V \Rightarrow \frac{Eac - b^2}{Ea} = V \Rightarrow Eac - b^2 = 21a \xrightarrow{a=-1}$$

$$E \times (-1) \times^2 - b^2 = -21 \Rightarrow b^2 = 12 \rightarrow b \begin{cases} +\sqrt{12} \\ -\sqrt{12} \end{cases}$$

$$y = -x^2 + \sqrt{12}x + 2 \quad \Delta > 0 \checkmark$$

$$y = -x^2 - \sqrt{12}x + 2 \quad \Delta > 0 \checkmark$$

۱

اگر $x^2 = t \Rightarrow t^2 + 2t + 3 = 0 \Rightarrow \Delta < 0$ ریشه ندارد.

ب) $(E - x^2) = t \Rightarrow t^2 - 2t - 15 = 0 \Rightarrow (t + 3)(t - 5) = 0 \Rightarrow t \begin{cases} -3 \checkmark \\ 5 \times \end{cases}$
 $E - x^2 = 5 \Rightarrow x^2 = -1$ غیرممکن
 $E - x^2 = -3 \Rightarrow x^2 = 7 \Rightarrow x \begin{cases} +\sqrt{7} \\ -\sqrt{7} \end{cases}$

۲

$\beta = \alpha + 2$
 $s = \frac{-b}{a}$
 $p = \frac{c}{a}$
 $\alpha + \beta = 2 \Rightarrow 2\alpha + 2 = 2 \Rightarrow 2\alpha = 0 \Rightarrow \boxed{\alpha = 0} \quad \boxed{\beta = 2}$
 $\alpha \cdot \beta = \frac{c}{a} \Rightarrow 1 \times 2 = \frac{m}{c} \Rightarrow \boxed{m = 2}$

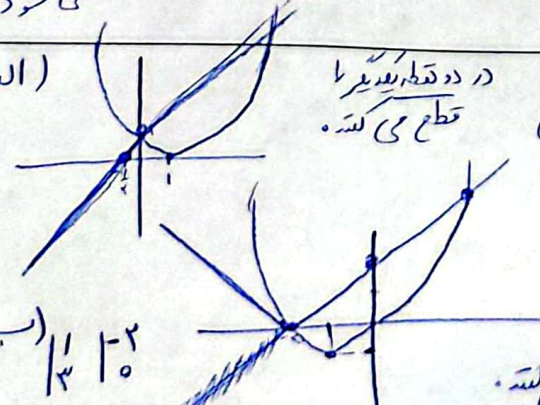
۳

$2\alpha - 5 = \beta$
 $\alpha \cdot \beta = \frac{m-1}{2} = 0 \Rightarrow m-1 = 0 \Rightarrow \boxed{m = 1}$
 $\alpha + \beta = 2 \Rightarrow 4\alpha - 5 = 2 \Rightarrow 4\alpha = 7 \Rightarrow \boxed{\alpha = \frac{7}{4}} \quad \boxed{\beta = -\frac{3}{4}}$

۴

$\beta = \frac{1}{\alpha} \Rightarrow \alpha \cdot \beta = 1$
 $\alpha \cdot \beta = 1 \Rightarrow \frac{m^2 - 2}{-m} = 1 \Rightarrow m^2 - 2 = -m \Rightarrow m^2 + m - 2 = 0$
 $(m-1)(m+2) = 0 \Rightarrow m \begin{cases} -2 \checkmark \\ 1 \checkmark \end{cases}$
 $n = -2 \Rightarrow 2x^2 + 4x + 5 - 2 = 0 \Rightarrow 2x^2 + 4x + 3 = 0 \quad \Delta < 0 \checkmark$
 $m = 1 \Rightarrow -x^2 + 4x + 1 - 2 = 0 \Rightarrow -x^2 + 4x - 1 = 0 \quad \Delta > 0 \checkmark$

۵

$x^2 - mx + c = 0$ $\alpha\beta = c \Rightarrow \alpha\beta(\beta) = c \Rightarrow \boxed{\beta = \frac{c}{\alpha}} \longrightarrow \frac{c}{\alpha} \times \frac{c}{\alpha} \times \alpha = c \Rightarrow \frac{c}{\alpha} \alpha = 1 \Rightarrow \boxed{\alpha = \frac{9}{c}}$ $\boxed{\alpha \cdot \beta = c}$ $\alpha + \beta = -\frac{b}{a} \Rightarrow m \Rightarrow \frac{9}{c} + \frac{c}{9} = \frac{27+14}{14} = \frac{41}{14}$ $-\frac{b}{a} \Rightarrow -\frac{b}{1} = \frac{41}{14} \Rightarrow \boxed{b = -\frac{41}{14} = m}$	6
$\beta = c\alpha$ $\alpha + \beta = c \Rightarrow c\alpha = c \Rightarrow \boxed{\alpha = 1} \quad \boxed{\beta = c}$ $\alpha \cdot \beta = m \Rightarrow 1 \times c = m \Rightarrow \boxed{m = c}$	7
$\alpha^2 + \frac{1}{\alpha^2} \Rightarrow (\alpha + \frac{1}{\alpha})(\alpha^2 + \frac{1}{\alpha^2} - 2) \Rightarrow$ $\boxed{\alpha + \beta = 1} \quad (\alpha + \beta)(\alpha^2 + \beta^2 - 2) \Rightarrow$ $\boxed{\alpha \cdot \beta = 2} \quad (-\frac{b}{a})(5^2 - 2 \cdot 2 - 2) \Rightarrow (1)(25 - 4 - 2) = 5$ $\boxed{\alpha = \frac{2}{\beta}} \quad (1)(25) \Rightarrow \boxed{25}$	8
ارتفاع $\Rightarrow \frac{\Delta}{a} \Rightarrow \frac{4ac - b^2}{4a} = \frac{4 \times 10 \times 9 - 2500}{-40} = \frac{2500}{40} = \boxed{62.5}$ زمانی که برسین می آید $\Rightarrow h(t) = -10t^2 + 250t \Rightarrow -10t^2 + 250t = 0 \Rightarrow t^2 - 25t = 0$ ارتفاع صفر می شود $(t)(t-25) = 0 \Rightarrow t < \begin{matrix} 0 \text{ و } 25 \end{matrix}$	9
(الف)  در دو نقطه برش قطع می کند. $(x-1)^2 = 2x+1 \Rightarrow x^2 - 4x = 0$ $(x)(x-4) = 0 \Rightarrow x < \begin{matrix} 0 \\ 4 \end{matrix}$ $x^2 + 2x = 1 \Rightarrow x^2 + 2x - 1 = 0$ $x > 2 \quad x^2 + 2x - 1 = 0 \Rightarrow x < \begin{matrix} -1 \\ 2 \end{matrix}$ $x < 2 \quad x^2 + 2x - 1 = 0 \Rightarrow x < \begin{matrix} -1 \\ 2 \end{matrix}$ در دو نقطه برش قطع می کند. (ب) $\begin{vmatrix} 1 & 2 \\ 1 & 0 \end{vmatrix}$	10