

$$y_{max} = \frac{-\Delta}{\varepsilon a} \Rightarrow \frac{-(b^2 + 12)}{-\varepsilon} = 17 \rightarrow b^2 + 12 = 17 \rightarrow b^2 = 5 \quad (1)$$

$$\rightarrow \boxed{b = \pm \sqrt{5}}$$

الف) $x^2 = t$ ب) $\varepsilon - x^2 = t$ (2)

$$t^2 + 2t + 3 = 0 \rightarrow \Delta = -1$$

$$t^2 - 2t - 15 = 0 \rightarrow (t-5)(t+3) = 0$$

$$\Delta < 0 \rightarrow \boxed{\text{ریشه حقیقی ندارد}}$$

$$t = 5 \rightarrow \varepsilon - x^2 - 5 = 0 \rightarrow x^2 = -1 \rightarrow \text{غیر ممکن}$$

$$t = -3 \rightarrow \varepsilon - x^2 + 3 = 0 \rightarrow x^2 = 7 \rightarrow \boxed{x = \pm \sqrt{7}}$$

$$x^2 - 14x + m = 0 \quad \alpha + 2 \text{ و } \alpha \leq 6 \quad (3)$$

$$S = \alpha + \alpha + 2 \rightarrow 2\alpha + 2 = \frac{-b}{a} \rightarrow 2\alpha + 2 = \varepsilon \rightarrow \alpha = \frac{\varepsilon - 2}{2}$$

$$P = \frac{c}{a} \Rightarrow \frac{m}{4} = 2 \Rightarrow \boxed{m = 8}$$

$$x^2 - 14x + m - 1 = 0 \quad (4)$$

$$2\alpha - \beta = \varepsilon \rightarrow \beta = 2\alpha - \varepsilon$$

$$S = \frac{-b}{a} \rightarrow \alpha + \beta = 2 \rightarrow \alpha + 2\alpha - \varepsilon = 2 \rightarrow \alpha = \frac{2 + \varepsilon}{3}$$

$$\beta = 2 \times \frac{2 + \varepsilon}{3} - \varepsilon = 0$$

$$P = \frac{c}{a} \rightarrow \frac{m-1}{4} = 0 \rightarrow m-1 = 0 \rightarrow \boxed{m = 1}$$

$$\alpha\beta = 2 \times 0 = 0$$

$$-mx^2 + \varepsilon x + m^2 - 2 = 0 \quad (5)$$

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

$$\boxed{m = 1} \rightarrow -x^2 + \varepsilon x - 1 = 0 \rightarrow \Delta > 0$$

$$m = -2 \rightarrow 2x^2 + \varepsilon x + 2 = 0 \rightarrow \Delta < 0 \rightarrow \text{غیر ممکن}$$

$$z^2 - mz + c = 0 \quad \alpha/\beta^2 = \xi \quad p = \frac{c}{a} = 3 \quad (6)$$

$$\alpha/\beta \times \beta = 3/\beta = \xi \rightarrow \beta = \frac{\xi}{c}, \quad \alpha = \frac{9}{\xi}$$

$$S = \frac{9}{\xi} + \frac{\xi}{c} = \boxed{\frac{\xi c}{12} = m}$$

$$z^2 - \xi z + m = 0 \quad \alpha = 3/\beta \quad S = \frac{-b}{a} = \xi \quad (7)$$

$$S = \beta + 3/\beta = \xi/\beta = \xi \rightarrow \beta = 1, \alpha = c \quad \alpha \times \beta = c$$

$$P = \frac{c}{a} \rightarrow c = \frac{m}{1} \rightarrow \boxed{m = c}$$

$$\alpha^r + \frac{1}{\alpha^r} = (\alpha)^r + \left(\frac{r}{\alpha}\right)^r = \left(\alpha + \frac{r}{\alpha}\right) \left(\alpha^r + \frac{\xi}{\alpha^r} - r\right) \quad (8)$$

$$\rightarrow \alpha + \frac{r}{\alpha} = \frac{\alpha^r + r}{\alpha} = \frac{V\alpha}{\alpha} = V \quad z^2 - Vz + r \rightarrow \alpha^r - V\alpha + r = 0$$

$$\rightarrow \alpha^r + \frac{\xi}{\alpha^r} = \frac{\alpha^r + \xi}{\alpha^r} \Rightarrow \frac{(\alpha^r + r)^r - \xi \alpha^r}{\alpha^r} = \frac{(\alpha^r + r)^r}{\alpha^r} - \frac{\xi \alpha^r}{\alpha^r} = \xi 9 - \xi = \xi \Delta$$

$$\left(\alpha + \frac{r}{\alpha}\right) \left(\alpha^r + \frac{\xi}{\alpha^r} - r\right) = V \times (\xi \Delta - r) = \boxed{(3 \cdot 1)}$$

$$z_5 = \frac{-b}{1a} = \frac{-20}{-1} = \frac{20}{1} \quad -10t^2 + 20t = 0 \quad (9)$$

$$+ (-10t + 20) = 0 \rightarrow t = 0$$

$$y_5 = -10\left(\frac{20}{1}\right) + 20\left(\frac{20}{1}\right) = \boxed{62/10} \rightarrow \text{ارتفاع}$$

$$\boxed{t = 20s}$$

$$\text{الف) } (x-1)^2 = 2x+1$$

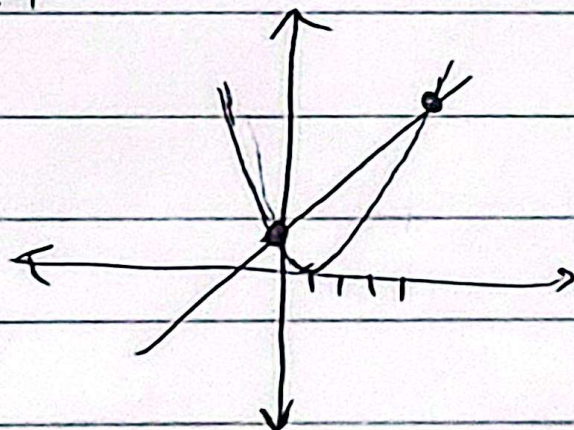
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$$x^2 - 2x + 1 = 2x + 1$$

$$x^2 - 4x = 0$$

$$x(x-4) = 0$$

$$x = 0, x = 4$$



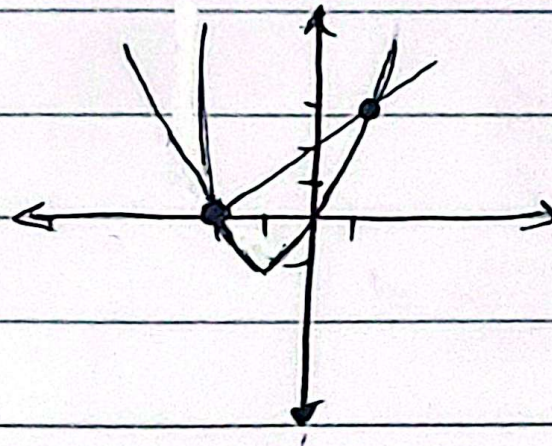
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$$\text{ب) } x^2 + 2x = |x+2|$$

$$x^2 + 2x - 2 = 0$$

$$x^2 + 2x - 2 = 0$$

$$x = -1, 1$$



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