

$$y = (a-1)x^2 + ax + 1, \quad a \neq 1$$

$$\frac{-b}{2a} = \frac{-1}{2(a-1)}, \quad y \rightarrow f(a-1) = 1 \rightarrow f(a) = 1 \rightarrow a = \frac{1}{1} \rightarrow -\frac{1}{2}x^2 + ax + 1 = 0$$

$$ax^2 - \frac{1}{2}x + 1 = 0 \rightarrow (a-1/2)(x+1) = 0 \rightarrow a = 1/2, \quad y \rightarrow a = 1/2$$

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$$f(x) = mx^2 - 2x + m, \quad \frac{a_1}{f(a)} = \frac{1}{1} + \frac{1}{1} = 2 \rightarrow m < 0 \quad (1)$$

$$0 > 0 \rightarrow 2d - 1m > 0 \rightarrow -\frac{2}{1} < m < \frac{2}{1} \quad (2)$$

$$(1) \wedge (2) = -\frac{2}{1} < m < \frac{2}{1}$$

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$$\frac{1-\sqrt{5}}{2}, \quad \frac{1+\sqrt{5}}{2} \rightarrow s = \frac{1-\sqrt{5}}{2} + \frac{1+\sqrt{5}}{2}, \quad p = \frac{(1-\sqrt{5})(1+\sqrt{5})}{4} = \frac{1-5}{4} = -1$$

$$ax^2 - sx + p = 0 \rightarrow (x^2 - 1x + \frac{1}{4} = 0) \times 4 \rightarrow 4x^2 - 4x + 1 = 0$$

۵

$$mx^2 - 1x + m + 1 = 0, \quad a < b, \quad 2a^2 + b^2 = 12 \rightarrow 2a^2 + a^2 + 2b^2 - b^2 = 12$$

$$2(a^2 + b^2) + (a^2 - b^2) = 12 \rightarrow 2(s^2 - 2p) + (s^2 - \frac{4p}{|a|}) = 12$$

$$2(1 - 2m) + (1 - 4m) = 12 \rightarrow (1 - m + \sqrt{12 - 4m})^2 = m^2 - 4m + 4 \rightarrow 1 - 1m + 12 = 0$$

$$m^2 - 1m + 12 = 0 \rightarrow m = 12$$

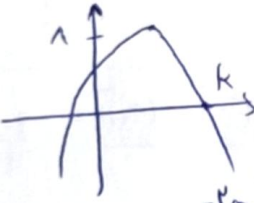
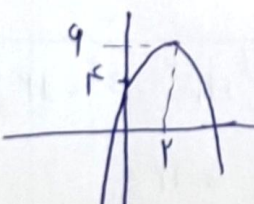
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$$s(1, 9) \rightarrow c = 0, \quad \frac{-b}{2a}, \quad y \rightarrow f(a) = -b \rightarrow \frac{-b}{2a} = 9 \rightarrow a^2 + a = 0$$

$$a(a+1) = 0 \rightarrow a = 0, -1 \rightarrow a = -1 \rightarrow b = 1 \rightarrow -a^2 + 1m + a = 0$$

$$-(a-1)(a+1) = \frac{-1 \cdot 1}{1 \cdot 1} = -1 \rightarrow \text{رابطه دایره با مرکز } (-1, 0)$$

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$a\alpha^2 - Va + a\beta = 0 \rightarrow \beta = \frac{V}{a} \rightarrow a + \beta = \frac{V}{a} \quad , \quad a\beta = \frac{aV}{a} \rightarrow a\beta = V$ $a \rightarrow \beta = \frac{V}{a} \quad \alpha \quad \left. \begin{array}{l} \frac{1}{a} + \frac{1}{\beta} = \frac{1}{V} + \frac{V}{V} = \frac{V}{V} \end{array} \right\}$ $\rightarrow \beta = \frac{V}{a} \quad \checkmark$	8
$a\alpha^2 + m\alpha - Vm = 0 \quad a^2 - m\beta = 1 \rightarrow a = a^2 + am - Vm = 0$ $m\beta + 1 = Vm - am \rightarrow \underline{am + m\beta = Vm - 1} \rightarrow m(\alpha + \beta) = Vm - 1$ $-m^2 = Vm - 1 \rightarrow m^2 + Vm - 1 = 0 \rightarrow m = \frac{-V \pm \sqrt{V^2 + 4}}{2}$ $\Delta > 0 \rightarrow m > 0 \rightarrow \underline{S = -V}$	9
 $f(x) = mx^2 + kx + \frac{m}{V} + V \rightarrow \frac{-\Delta}{4a} > 1 \rightarrow \frac{m^2 + (Vm - 1)}{Vm} > 1$ $m^2 - Vm - 1 > 0 \rightarrow m > \frac{V}{2} \rightarrow m < 0 \quad \checkmark$ $-Vm^2 + k^2 + 4 \rightarrow a^2 - Vm - V = f(x) \rightarrow (x - V)(x + 1) \rightarrow \alpha = V, \alpha = -1$ $a = V \rightarrow k > 0 \rightarrow \underline{K < V}$	10
 $\rightarrow c < 0 \quad , \quad \frac{-b}{2a} < 0 \rightarrow f_{max} = b \quad , \quad \frac{-\Delta}{4a} < 4 \rightarrow a < -\frac{1}{r} \quad , \quad b > 0$ $-\frac{1}{r} a^2 + k^2 + 4 = f(x) \rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{a + \beta}{a\beta} = \frac{-1}{r}$	11
$a^2 - (k + f) \alpha + (ka^2 + 4a + V) = 0 \rightarrow \Delta > 0 \rightarrow ka^2 - Va - 1 < 0 \rightarrow a < 1, \frac{-1}{k}$ $a = 1 \rightarrow a^2 - k + V = 0 \rightarrow (a - V)(a - 4) \rightarrow a < 4, V$ $a < -\frac{1}{r} \rightarrow a^2 - \frac{1}{r} + \frac{k}{r} = 0 \rightarrow (a - V)(a - \frac{V}{r}) \rightarrow a < \frac{V}{r} > V$ $\Delta > 0 \rightarrow (k + f)^2 - 4(ka^2 + 4a + V) = (4a^2 + 16ka + 16 - 16a^2 - 4Vm - 12) =$ $ka^2 - 4a + 4 \rightarrow a^2 - 4a + 4 = (a - 1)^2 = 0 \rightarrow a = 1 \quad \underline{a < 4, \frac{V}{r}}$	12