

$$y = (a-1)x^2 + x + 3$$

$$-\frac{b}{2a} = 2 \rightarrow \frac{-1}{2(a-1)} = 2 \rightarrow -1 = 4(a-1) \rightarrow a = \frac{5}{4}$$

$$\rightarrow y = -\frac{1}{4}x^2 + x + 3 \xrightarrow{\Delta} \frac{-1 \pm \sqrt{1+3}}{-1/2} \rightarrow \frac{-1+2}{-1/2} = 2 \rightarrow \text{ریشه مثبت} = 2 \checkmark$$

~~.....~~

$$f(x) = mx^2 - 5x + m$$

① $m < 0 \rightarrow m < 0$

② $\Delta > 0 \rightarrow 25 - 4m^2 > 0 \rightarrow m^2 < \frac{25}{4} \rightarrow -\frac{5}{2} < m < \frac{5}{2}$

$$\begin{array}{c|cc} x & x_1 & x_2 \\ \hline f(x) & - & + \end{array}$$

① و ② $\rightarrow -\frac{5}{2} < m < 0 \rightarrow (-\frac{5}{2}, 0) \checkmark$

$$S = \frac{3-\sqrt{5} + 3+\sqrt{5}}{2} = 3$$

$$P = \frac{(3-\sqrt{5})(3+\sqrt{5})}{2} = \frac{4}{2} = 2$$

$$\rightarrow x^2 - 3x + 2 = 0 \xrightarrow{\text{خارج}} \boxed{x^2 - 3x + 2 = 0} \checkmark$$

$$2\alpha^2 + 3\beta^2 = 12 \rightarrow 2(\alpha^2 + \beta^2) + 1(\alpha^2 - \beta^2) = 12$$

$$2x^2 - 11x + m + 2 = 0$$

$$\alpha^2 + \beta^2 = 14 - (m+2)$$

$$\alpha^2 - \beta^2 = \left(\frac{-\sqrt{44-4m+4}}{2} \right) \times 2 = -\sqrt{44-4m} = -2\sqrt{11-m}$$

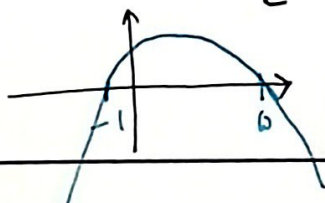
$$t^2 - 4t + 4 = 0 \rightarrow (t-2)^2 = 0 \rightarrow t = 2$$

$$\sqrt{11-m} = 2 \rightarrow 11-m = 4 \rightarrow m = 7 \checkmark$$

$$32 - 2m - 4 + -2\sqrt{11-m} = 12 \rightarrow 12 - 2m + 2 - 4 + -2\sqrt{11-m} = 12$$

$$S = (2, 9) \rightarrow y = a(x-2)^2 + 9 \quad C = 5$$

$$y = ax^2 - 4ax + 4a + 9 \xrightarrow{C} 4a + 9 = 5 \rightarrow a = -1 \rightarrow -x^2 + 4x + 5$$



$$\rightarrow (-1, 5) \checkmark \text{ بالای محور } x$$

$$\frac{1}{\alpha + \beta} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha \beta} = \frac{\frac{V}{\alpha}}{\frac{V}{\alpha \beta}} = \frac{V}{\frac{V}{\alpha \beta}}$$

$$\alpha n^2 - Vn + 9\beta$$

$$\alpha \geq n \rightarrow \alpha^2 - V\alpha + 9\beta = 0 \rightarrow \alpha^2 - V\alpha - \frac{1}{\alpha} \rightarrow \alpha^2 - V\alpha - 1 = 0 \rightarrow \alpha^2 - V\alpha - 1 = 0$$

$$(t+9)(t+r) =$$

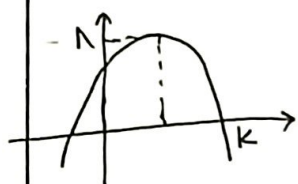
$$\beta \leq n \rightarrow \alpha \beta^2 - V\beta + 9\beta = 0 \rightarrow \alpha \beta = -r \rightarrow \beta = -\frac{r}{\alpha} \rightarrow \beta = -\frac{r}{\frac{V}{\alpha}} \rightarrow \beta = -\frac{r}{V}$$

$$n^2 + mn - 1m = 0 \rightarrow \beta^2 + m\beta - 1m = 0 \rightarrow -m\beta, \beta^2 - 1m$$

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

$$m = -r, m = 1$$

$$\rightarrow m^2 + fm - 1 = 0 \rightarrow \underline{S = -r} \checkmark$$

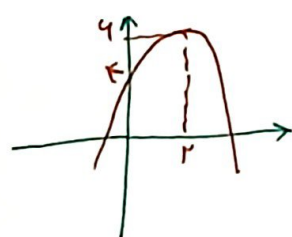


$$-\frac{\Delta}{f_a} = 1 \rightarrow \frac{f(n) = mn^2 + fm + \frac{m}{r} + v}{-(14 - fm(\frac{m}{r} + v))} = 1$$

$$\boxed{K = r} \checkmark$$

$$-14 + 1m^2 + 1m = 14m$$

$$1m^2 - fm - 14 = 0 \rightarrow m^2 - fm - 14 = 0 \rightarrow (m-r)(m+r) = 0 \rightarrow m = r, m = -r$$



$$a(n-r)^2 + 4 = an^2 + fan + \frac{f}{r} + 4$$

$$C = f \rightarrow fa + 4 = f \rightarrow a = -\frac{1}{r}$$

$$-\frac{1}{r}m^2 + fm + f = 0$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha \beta} = \frac{-\frac{r}{f}}{-\frac{1}{r}} = \frac{r}{f}$$

$$\boxed{f = -\frac{1}{r}} \checkmark$$

$$n^2 - (fa + f)n + (ra^2 + 4a + r) = 0$$

$$n \geq r \rightarrow f - na + 1 + ra^2 + 4a + r = 0 \rightarrow ra^2 - fa + 1 \rightarrow a = \frac{1}{r} - \frac{1}{f}$$

$$a \geq 1 \rightarrow n^2 - 1n + 1 = 0 \rightarrow n = 1, n = 1$$

$$\boxed{n \geq 4} \checkmark$$

$$a = -\frac{1}{r} \rightarrow n^2 + \frac{1}{r}n + \frac{1}{r} = 0 \rightarrow n = -\frac{1}{2r}, n = -\frac{1}{2r}$$