

$$\alpha^2 - 2\alpha + 1 = 0$$

$$\alpha + \beta = 0 \rightarrow \alpha = -\beta$$

(1)

$$\alpha \rightarrow \beta^2 - 2\beta + 1 = 0 \rightarrow \beta^2 - 2\beta + 1$$

$$\beta^2 \rightarrow (\alpha\beta - 1)\beta \rightarrow \alpha\beta^2 - \beta \rightarrow \alpha(\alpha\beta - 1) - \beta \Rightarrow \alpha^2\beta - \alpha - \beta \Rightarrow \alpha^2\beta - 1 - \beta = 1 - \alpha^2\beta - 1$$

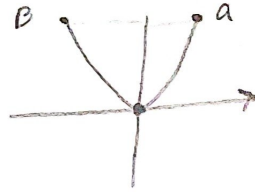
$$\beta^2 \rightarrow (\alpha\beta - 1)(\beta) \Rightarrow \alpha\beta^2 - \beta \rightarrow \alpha^2(\alpha\beta - 1) - \beta \Rightarrow 1 - \alpha^2\beta - 1 - \beta \Rightarrow 1 - \alpha^2\beta - 1 - \beta$$

$$\beta^2 \rightarrow (1 - \alpha^2\beta - 1)(\beta) \Rightarrow 1 - \alpha^2(\alpha\beta - 1) - \beta \Rightarrow 1 - \alpha^2\beta - 1 - \beta$$

$$\frac{\alpha + \beta}{\alpha\beta} \Rightarrow \frac{1 - \alpha^2\beta + 1 - \alpha^2\beta - 1}{1 - \alpha^2\beta - 1} \Rightarrow \frac{1 - \alpha^2\beta - 1}{1 - \alpha^2\beta - 1} \Rightarrow \frac{1 - \alpha^2\beta - 1}{1 - \alpha^2\beta - 1} = 1$$

(2)

$$a(-1, 0, -1) \cdot b(1, -1) \Rightarrow$$



$$\alpha = \frac{-1 \cdot 0 + 1 \cdot 1}{1} = 1$$

$$\frac{\alpha + \beta}{1} = 0 \Rightarrow \alpha + \beta = 0$$

(3)

$$\alpha^2 + 14\alpha + 5 = 0 \rightarrow |\alpha - \beta| = \sqrt{14^2 - 4} = \frac{14}{10} \sqrt{10}$$

$$\left[\frac{14}{10} \right] \rightarrow \left[\frac{7}{5} \right] \Rightarrow 7$$

$$14K^2 - 14K^2 - 10 = 0$$

$$14K^2 - 14K^2 - 10 = 0$$

$$14K^2 - 10 = 0$$

$$14(K^2 - 1) = 0$$

$$K = \pm 1 \rightarrow$$

از 0 تا 1 و از 1 تا 2

(4)

$$B(-5, 2) \quad A(1, 2) \rightarrow$$

$$\alpha(x+1)^2 + 1 = 2$$

$$2 = \alpha x^2 + 2\alpha x + \alpha + 1$$

$$\alpha^2 - 2\alpha = 1 - 2 \left(\frac{\alpha+1}{\alpha} \right) = 0$$

$$2\alpha + 2 = -\alpha \rightarrow \alpha = -\frac{2}{3}$$

$$\frac{1}{10} \Rightarrow -\frac{2}{3} + 1 = \frac{1}{3}$$

(5)

$$-\alpha^2 + 2\alpha + m = 0$$

$$\alpha + \beta = 10 \rightarrow \alpha + \beta = 10 < 9 \checkmark$$

$$-\alpha^2 + 2\alpha + m = 0$$

$$\textcircled{1} \max \Delta \Rightarrow \frac{-b + \sqrt{\Delta}}{2a} \rightarrow \Delta = b^2 - 4ac = 10 + 4m$$

$$\Rightarrow \frac{10 + \sqrt{10 + 4m}}{1} < 10$$

$$10 + \sqrt{10 + 4m} < 10$$

$$\sqrt{10 + 4m} < 0$$

$$10 + 4m < 0$$

$$4m < -10$$

$$m < -2.5$$

$$\textcircled{2} \Delta > 0 \rightarrow 10 + 4m > 0$$

$$m > -\frac{10}{4}$$

$$m > -2.5$$



$$\begin{bmatrix} -1 \\ -2 \\ -3 \\ -4 \end{bmatrix} \Rightarrow$$

4

$$m x^2 - 12x + 5m - 1 = 0$$

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$$\Delta = b^2 - 4ac = 144 - 4m(5m-1) = 0 \rightarrow 144 - 20m^2 + 4m = 0 \rightarrow 5m^2 - 4m - 36 = 0$$

$$m = \frac{4 \pm \sqrt{16 + 720}}{10} = \frac{4 \pm 26}{10} \rightarrow m = 3 \text{ or } m = -\frac{12}{5}$$

$$\Delta = 144 - 4m(5m-1) = 0 \rightarrow \Delta = 0$$

$$x^2 + r(a+1)x + ra - 1 = 0 \rightarrow a = \alpha \beta \Rightarrow \frac{ra-1}{1} \Rightarrow a^2 = ra-1$$

$$x^2 + rx + 1 = 0 \rightarrow \Delta = r^2 - 4 = 0 \rightarrow r = \pm 2$$

$$x^2 - \sqrt{2}x - 5 = 0 \rightarrow x = \frac{\sqrt{2} \pm \sqrt{2 + 20}}{2} = \frac{\sqrt{2} \pm \sqrt{22}}{2}$$

$$x^2 - vt - 5 = 0 \rightarrow t = \frac{v \pm \sqrt{v^2 + 20}}{2} \Rightarrow \Delta = 49 - 14x = 49 \Rightarrow \frac{v \pm \sqrt{49}}{2} = t = x \cdot p$$

$$y = kx^2 - 4x - 7 \rightarrow x = \frac{4 \pm \sqrt{16 + 28k}}{2k} \rightarrow y = -\frac{4}{k} - 7$$

$$y = -mx^2 + mx + 1 \rightarrow y = -m - x \Rightarrow -mx^2 + mx + 1 = -m - x \Rightarrow -mx^2 + (m+1)x + m+1 = 0$$

$$\Delta = (m+1)^2 - 4m(m+1) = (m+1)(5m+1) < 0 \Rightarrow -1 < m < -\frac{1}{5}$$