

معادله درجه دوم

$$3x^2 - ax + 4 = 0$$

α, β

$$S = -\frac{b}{a} = 1\alpha + \alpha = 4\alpha \Rightarrow \frac{\alpha}{3} = 4\alpha$$

$$P = \frac{c}{a} = 1\alpha \times \alpha = 1\alpha^2 \Rightarrow \frac{4}{3} = 1\alpha^2 \Rightarrow \alpha^2 = \frac{4}{3} \Rightarrow \alpha = \pm \frac{2}{\sqrt{3}}$$

$$\text{if } 4\alpha = \frac{\alpha}{3} \Rightarrow a = 12\alpha \begin{cases} a = 12 \times \frac{2}{\sqrt{3}} = 8\sqrt{3} \\ a = 12 \times -\frac{2}{\sqrt{3}} = -8\sqrt{3} \end{cases}$$

$$1 - (-1) = 2$$

۵

معادله درجه دوم

$$34x^2 - (m+1)x + 1 = 0$$

if $m \in \mathbb{Z}$ and $\alpha, \beta \in \mathbb{Q} \rightarrow P = ?$

$$\sqrt{\frac{1}{\alpha}} + \sqrt{\frac{1}{\beta}} = 5 \quad \frac{\sqrt{\alpha} + \sqrt{\beta}}{\sqrt{\alpha\beta}} = 5 \Rightarrow \sqrt{\alpha} + \sqrt{\beta} = \frac{5}{4} \sqrt{\alpha\beta} \quad \alpha + \beta + 2\sqrt{\alpha\beta} = \frac{25}{16}$$

$$\frac{m+1}{34} + \frac{1}{4} = \frac{25}{16} \Rightarrow m+1+12 = 25 \Rightarrow m = 12$$

$$P = \frac{1}{m} = \frac{1}{12} = \frac{1}{12}$$

۵

$$x^3 + kx^2 - 9x - 12 = 0$$

$$\alpha + \beta = 1$$

$$\alpha\beta = -12$$

$k = ?$

$$\alpha = 4$$

$$\hookrightarrow x^3 - x - 12 \rightarrow (x-4)(x+1) \Rightarrow \beta = -1$$

$$\text{if } \alpha = 4 \Rightarrow 64 + 4k - 36 - 12 = 0 \Rightarrow 4k = -16 \Rightarrow k = -4$$

$$\text{if } \alpha = -1 \Rightarrow -1 + k + 9 - 12 = 0 \Rightarrow k = 4$$

۵

$$x^2 + 4x + a = 0$$

$$\alpha + \beta = -4, \alpha\beta = a$$

$$\alpha < \beta < 0$$

$$1\alpha^2 + 1\beta^2 = 11\sqrt{2} + 18\Delta$$

$a = ?$

$$\hookrightarrow \frac{\Delta}{4} (\alpha^2 + \beta^2) + \frac{1}{4} (\alpha^2 - \beta^2) \hookrightarrow S^2 - 4P \hookrightarrow S \times \sqrt{\Delta}$$

$$\alpha^2 + \beta^2 = 16 - 2a \quad \alpha^2 - \beta^2 = -4\sqrt{16 - 4a}$$

$$11\sqrt{2} + 18\Delta = \frac{\Delta}{4} (16 - 2a) + \frac{1}{4} (-4\sqrt{\Delta}) \Rightarrow 11\sqrt{2} = -\sqrt{\Delta} = \sqrt{\Delta} = -2\sqrt{2}$$

$$16 - 4a = 4 \Rightarrow 4a = 12 \Rightarrow a = 3$$

۵

$$x^2 - vx^2 - \delta = 0$$

S, P

$$1P^2 - 1S^2 + 1S = ?$$

$$\text{if } x^2 = t \Rightarrow t^2 - vt - \delta = 0 \Rightarrow t = \frac{v \pm \sqrt{v^2 + 4\delta}}{2} \Rightarrow t = \frac{v \pm \sqrt{49}}{2}$$

$$t = x^2 \Rightarrow x = \pm \sqrt{\frac{v \pm \sqrt{49}}{2}}$$

$$1 \times P^2 - 1 \times S^2 + 1 \times S = 1P^2$$

$$S = \dots, P = \frac{-v - \sqrt{49}}{2}$$

$$1 \left(\frac{-v - \sqrt{49}}{2} \right)^2 = \frac{11 \times 1 + 1 \times \sqrt{49}}{2} = \frac{12 + 7}{2} = \frac{19}{2}$$

۵

$$rx^r - ax + b = 0$$

$$rx^r + ax - 4 = 0 \rightarrow S = \frac{-a}{r_0} = -\frac{1}{r}, P = -4 \Rightarrow b = -4 \quad \left(\begin{array}{l} \text{مقدار } r \text{ و } \frac{1}{r} \text{ در } \odot \text{ است} \\ a = -\frac{1}{r} \end{array} \right)$$

$$S = \frac{a}{r}, P = \frac{b}{r}$$

$$\left[\frac{ab}{r} \right] = -r$$

$$\left[\frac{1x - 4}{r} \right] = [-118] = -r$$

$$ax^r - ax - b = 0 \rightarrow S = \frac{-a}{a} = -1 \Rightarrow \alpha + \beta = 1 \Rightarrow \alpha = 1 - \beta$$

$$r \cdot \beta^r + r \cdot \alpha^r - r \cdot \beta = 14$$

$$r \cdot \beta^r + r \cdot (1 - \beta)^r - r \cdot \beta = 14$$

$$r \cdot \beta^r + r \cdot (1 + \beta^r - 2\beta) - r \cdot \beta = 14$$

$$r \cdot \beta^r + r + r \cdot \beta^r - r \cdot \beta - r \cdot \beta - 14 = 0$$

$$4 \cdot \beta^r - 4 \cdot \beta + r = 0 \rightarrow r \cdot \beta^r - r \cdot \beta + 1 = 0 \rightarrow r \cdot \beta(\beta - 1) = -1 \Rightarrow r \cdot \alpha \beta = 1$$

$$P = \frac{-b}{a} = r \cdot \beta = \frac{1}{r} \Rightarrow a = -r \cdot b$$

$$-r \cdot b x^r - r \cdot b x - b = 0$$

$$|\alpha - \beta| = \frac{\sqrt{\Delta}}{|a|}$$

$$\frac{r}{\sqrt{a}}$$

$$x^r (a+1) x + a = 0 \rightarrow \text{دو درجه متوالی ضربی}$$

$$x^r - (ra+1) x + b = 0 \rightarrow \text{دو درجه متوالی ضربی}$$

$$S = a+1 = r\alpha+r, P = a \Rightarrow \alpha^r + r\alpha = a \Rightarrow r\alpha+1 = \alpha^r + r\alpha \Rightarrow \alpha = \pm 1$$

$$a+1 = r\alpha+r \Rightarrow a = r$$

$$r \cdot 1 = r$$

$$\alpha = \alpha + r$$

$$\beta \cdot \beta + r \rightarrow S = ra+1 \xrightarrow{a=r} S=1, P=b \Rightarrow r\beta+r=1$$

$$r(\beta+1) = r \Rightarrow \beta = r, \beta+r = r \quad 4x^2 = r^2 \quad r^2 - 4 = r^2$$

$$x^r + x - 1 - m^r = 0$$

$$\alpha^r + \beta^r \rightarrow \text{ضرب}$$

$$P = -1 - m^r$$

$$S = \frac{-1}{1} = -1$$

$$S^r - rP = (-1)^r - r(-1 - m^r) = 1 + r + rm^r \Rightarrow r + rm^r = 0$$

$$\begin{array}{l} r + rm^r = 0 \\ \downarrow \\ m^r = -1 \end{array}$$

$$r_{+0} = \mu$$

$$A \left| \begin{array}{c} r \\ y \end{array} \right. \quad B \left| \begin{array}{c} -a \\ y \end{array} \right. \quad S \left| \begin{array}{c} x_3 = -1 \\ y_3 = 1 \end{array} \right.$$

$$x_3 = \frac{r-d}{r} = \frac{-r}{r} = -1$$

$$y = ax^r + bx + c \quad \frac{a}{r} = -1 \Rightarrow b = r_2 \Rightarrow y = ax^r + r_2x + c$$

$$y = ax^r + r_2x - \frac{a}{r}$$

$$\text{if } x = -1 \Rightarrow a - r_2 - \frac{a}{r} = 1 \Rightarrow -a - \frac{a}{r} = 1 \Rightarrow -ra = r \Rightarrow a = -\frac{r}{r}$$

$$y = \frac{-r}{r} x^r - \frac{r}{r} x + \frac{1}{r}$$

$$\text{if } x = \dots \Rightarrow y = \frac{1}{r}$$