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

$$x_1 = 3x_2$$

$$S = x_1 + x_2 = f/x_2 \left\{ \begin{array}{l} f/x_2 = \frac{1}{3} \\ f/x_2 = -\frac{1}{3} \end{array} \right\} \Rightarrow a = 1 \cdot 1 = 1$$

$$\Delta = 1 - (-1) = 14$$

$$P \cdot x_1 \cdot x_2 = 3x^2 \rightarrow 3x^2 = \frac{f}{3} \rightarrow x = \frac{f}{9} \rightarrow x = \pm \frac{1}{3}$$

$$3x^2 - (m+14)x + 1 = 0 \rightarrow S = \frac{m+14}{3} \quad P = \frac{1}{3}$$

$$\frac{1}{\sqrt{a}} + \frac{1}{\sqrt{b}} = 2 \rightarrow \left(\frac{\sqrt{a} + \sqrt{b}}{\sqrt{ab}} \right)^2 = \frac{a+b+2\sqrt{ab}}{ab} = 4 \rightarrow \frac{S+2\sqrt{P}}{P} = 4 \rightarrow \frac{\frac{m+14}{3} + \frac{2}{3}}{\frac{1}{3}} = 4$$

$$\rightarrow \frac{m+14+2}{1} = m+16 = 4 \rightarrow m = -12 \quad m x^2 + 3x + 1 = 0 \rightarrow P = \frac{1}{m} = -\frac{1}{12}$$

$$f x^2 + k x - 9x - 1 = 0$$

$$K = -3$$

$$a+B=1 \Rightarrow B=1-a$$

$$aB = -1 \rightarrow a(1-a) = -1 \rightarrow a - a^2 = -1 \rightarrow a^2 - a - 1 = 0 \quad \begin{cases} a = -1 \rightarrow B = 2 \\ a = 2 \rightarrow B = -1 \end{cases}$$

$$x=2 \rightarrow 4 + k - 18 = 0 \Rightarrow k = 14$$

$$x=-1 \rightarrow -1 + k - 9 = 0 \Rightarrow k = 10$$

$$x^2 + 9x + a = 0$$

$$a < B < 0$$

$$\Delta = 81 - 4a$$

$$a = \frac{-9 \pm \sqrt{81-4a}}{2} = -\frac{9}{2} \pm \sqrt{\frac{81-4a}{4}}$$

$$B = \frac{-9 - \sqrt{81-4a}}{2} = -\frac{9}{2} - \sqrt{\frac{81-4a}{4}}$$

$$a = 1$$

$$x^2 - 3x + 4 = 0 \rightarrow (x-1)(x-4) = 0$$

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$$x^2 = t \rightarrow t^2 - 3t + 4 = 0 \rightarrow \Delta = 9 - 16 = -7 \rightarrow t = \frac{3 \pm \sqrt{-7}}{2} \rightarrow x = \frac{3 \pm \sqrt{-7}}{2}$$

$$3x = \pm \sqrt{\frac{3 \pm \sqrt{-7}}{2}} \rightarrow S = 0 \rightarrow P = \frac{3 \pm \sqrt{-7}}{2} \rightarrow P = \frac{9 \pm 14\sqrt{-7} + 49}{4}$$

$$3x^2 - 3x + 4 = 0 \rightarrow \Delta = 9 - 48 = -39$$

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

$$rax^r + ax - q = 0$$

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

$$S_1 = x_1 + x_r = -\frac{1}{r}$$

$$P = x_1 x_r = \frac{b}{r}$$

$$S_2 = -\frac{q}{ra} = -\frac{1}{r}$$

$$P = -\frac{q}{ra} = -\frac{r}{a}$$

$$S_1 = x_1 + x_r + 1 \Rightarrow -\frac{1}{r} + 1 = \frac{1}{r} \Rightarrow \frac{a}{r} \Rightarrow a = 1$$

$$P_1 = x_1 x_r + \frac{1}{r}(x_1 + x_r) + \frac{1}{r} \Rightarrow -\frac{r}{a} - \frac{1}{r} + \frac{1}{r} = -\frac{r}{a} \xrightarrow{a=1} P = -r = -\frac{b}{r} \Rightarrow b = -r$$

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

$$r_0 B^r + r_0 a^r - r_0 B = 1V$$

$$a - B = \frac{r}{\sqrt{a}}$$

$$S = a + B = \frac{a}{a} = 1$$

$$r_0 B^r + r_0 a^r - r_0 B = 1V$$

$$r_0 (S^r - rP) + r_0 (B - a) (B - a) - r_0 B = 1V$$

$$r_0 (1 + \frac{rB}{a}) - r_0 B - r_0 a = 1V \Rightarrow r_0 (1 + \frac{rB}{a}) = r_0 \Rightarrow 1 + \frac{rB}{a} = \frac{a}{r} \Rightarrow \frac{rB}{a} = \frac{a}{r} - 1 \Rightarrow B = \frac{a}{r} - \frac{a}{r}$$

$$\Delta = a^r - 4a(\frac{a}{r_0}) = a^r - \frac{a^r}{a} = \frac{r_0 a^r}{a}$$

$$|a - B| = \frac{ra}{a} = \frac{r}{\sqrt{a}}$$

$$x^r - (a+1)x + a = 0$$

$$x^r - (ra+1)x + b = 0$$

$$\left. \begin{aligned} S = a+1 \Rightarrow x + x + r \rightarrow a+1 = 2x+r \Rightarrow a = 2x+1 \\ P = a \Rightarrow x^r + rx \end{aligned} \right\} \Rightarrow x^r + rx = 2x+1 \Rightarrow x^r = 1 - rx \Rightarrow x = \pm 1$$

$$S = ra+1 = y + r \Rightarrow y = \frac{ra+1-r}{r} = y = r, y_r = r \Rightarrow r = r$$

$$P = b \Rightarrow P - P = rE - r = r(1-1) = 0$$

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

$$S = a + B = -1 \Rightarrow B = -1 - a$$

$$-m^r \geq 0 \Rightarrow -rm^r \geq 0 \Rightarrow r + rm^r \geq r \Rightarrow a^r + B^r \geq r$$

$$P = aB = a(-1-a) = -a - a^r = -1 - m^r$$

$$\textcircled{w} \text{ ملاحظة } a^r + B^r \text{ متساوية لـ } r$$

$$-\frac{a+r}{r} = -1 \Rightarrow S(-1,1) \quad -\frac{b}{ra} = -1 \Rightarrow \frac{b}{a} = r = S = a+B$$

$$a^r + B^r = S - rP = a \Rightarrow r - rP = a \Rightarrow P = -\frac{1}{r} \quad y = x^r - rx + P \Rightarrow y = x^r - rx - \frac{1}{r}$$

$$\Rightarrow x=0 \Rightarrow y = 0 + 0 - \frac{1}{r} \Rightarrow y = -\frac{1}{r} \Rightarrow (0, -\frac{1}{r})$$

$$y = ax^r + kax + a \Rightarrow y = \frac{r}{r} x^r + \frac{r}{r} ax + a \Rightarrow \frac{r}{r} + \frac{r}{r} = S - rP \Rightarrow a = -\frac{r}{r}$$

$$a+1 = \frac{1}{r} \Rightarrow a = -\frac{r}{r}$$