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$$43r = 4r = \frac{a}{3} \Rightarrow a = 12r$$

$$r(3r) = 3r^2 = \frac{4}{3} \Rightarrow r^2 = \frac{4}{9} \Rightarrow r = \pm \frac{2}{3}$$

$$r = \frac{2}{3} \Rightarrow a = 12 \times \frac{2}{3} = 8$$

$$r = -\frac{2}{3} \Rightarrow a = 12 \times (-\frac{2}{3}) = -8$$

$$\left. \begin{array}{l} a = 8 \\ a = -8 \end{array} \right\} |1 - (-1)| = 2 \checkmark$$

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$$\alpha + \beta = \frac{m+14}{34}, \alpha \cdot \beta = \frac{1}{34} \Rightarrow \sqrt{\alpha \beta} = \frac{1}{4}$$

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

$$\Rightarrow (m+14) + 12 = 25 \Rightarrow m + 26 = 25 \Rightarrow m = -1$$

$$\Rightarrow mx^2 + 3x + 2 = 0 \Rightarrow \frac{c}{a} = \frac{2}{m} \xrightarrow{①} \frac{2}{-1} = -2 \checkmark$$

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$$\alpha + \beta + \gamma = -\frac{k}{r} \quad ① \quad \alpha \beta \gamma = \frac{r}{k} = \frac{1}{r} \quad ②$$

$$② \Rightarrow (-r)\gamma = \frac{1}{r} \Rightarrow \gamma = -\frac{1}{r}$$

$$① \Rightarrow 1 - \frac{1}{r} = \frac{r}{k} = -\frac{k}{r} \Rightarrow k = -r \checkmark$$

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$$\alpha + \beta = -4 \quad ① \quad \alpha \cdot \beta = a \quad ② \quad ① \Rightarrow \beta = -\alpha - 4$$

$$\Rightarrow 3\alpha^2 + 2(-\alpha - 4) = 12\sqrt{2} + 18 \Rightarrow 3\alpha^2 + 2\alpha - 18 = 12\sqrt{2}$$

$$\Rightarrow \Delta = 4 - 4 \times 3 \times (-18 - 12\sqrt{2}) = 180 + 144\sqrt{2} = (6 + 12\sqrt{2})^2$$

$$\Rightarrow \alpha = \frac{-2 \pm (6 + 12\sqrt{2})}{6} \rightarrow \alpha < 0 \Rightarrow \frac{-8 - 12\sqrt{2}}{6} = -\frac{4}{3} - 2\sqrt{2}$$

$$\beta = -4 - \alpha \Rightarrow -4 - (-\frac{4}{3} - 2\sqrt{2}) = -\frac{8}{3} + 2\sqrt{2} \xrightarrow{①} \alpha < \beta < 0 \checkmark$$

$$\alpha \cdot \beta = (-\frac{4}{3} - 2\sqrt{2})(-\frac{8}{3} + 2\sqrt{2}) = 9 - 1 = 8 \Rightarrow a = 8 \checkmark$$

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$$x^2 = t \Rightarrow t^2 - 7t - 5 = 0 \Rightarrow t = \frac{7 \pm \sqrt{49 + 20}}{2} = \frac{7 \pm \sqrt{69}}{2} \quad t > 0$$

$$x = \pm \sqrt{\frac{7 \pm \sqrt{69}}{2}}, x = \pm \sqrt{\frac{7 - \sqrt{69}}{2}} \Rightarrow S = (a) + (-a) + (\beta) + (-\beta) = 0$$

$$P = \frac{c}{a} \rightarrow \frac{-5}{1} = -5 \quad P = -(\frac{7 + \sqrt{69}}{2})$$

$$r(-5)^2 - 3(0)(-5) + 2(0) = 2 \times 25 = 50$$

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$$2pr^2 - 3sp + 2s = 2pr^2 = 29 + \sqrt{49}$$

$$rx^r - ax + b = 0 \Rightarrow \alpha + \beta = \frac{a}{r}, \alpha\beta = \frac{b}{r} \quad (\alpha = r + \frac{1}{r}, \beta = s + \frac{1}{r})$$

$$rax^r + ax - 4 = 0 \Rightarrow r + s = -\frac{a}{ra} = -\frac{1}{r}, rs = \frac{-4}{ra} = -\frac{r}{a}$$

$$\alpha + \beta = (r+s) + 1 = -\frac{1}{r} + 1 = \frac{1}{r} \Rightarrow \frac{a}{r} = \frac{1}{r} \Rightarrow a = 1 \quad (1)$$

$$\alpha\beta = rs + \frac{1}{r}(r+s) + \frac{1}{r} = -\frac{r}{a} + \frac{1}{r}(-\frac{1}{r}) + \frac{1}{r} \Rightarrow \alpha\beta = -r = \frac{b}{r} \Rightarrow$$

$$b = -r^2 \quad (2) \quad (1)(2) \Rightarrow \left[\frac{1(-r)}{r} \right] = -r \quad \checkmark$$

$$\alpha + \beta = \frac{a}{r} = 1 \Rightarrow \alpha = (\alpha + \beta) - \beta = 1 - \beta$$

$$r_0(r\beta^r + (1-\beta)^r - \beta) = 1V \Rightarrow r\beta^r + (1 + \beta^r - r\beta) - \beta = \frac{1V}{r_0}$$

$$r\beta^r - r\beta + \frac{r}{r_0} = 0 \Rightarrow r_0\beta^r - r_0\beta + 1 = 0 \Rightarrow \beta = \frac{r_0 \pm \sqrt{r_0^2 - 4r_0}}{2r_0} = \frac{1}{r} \pm \sqrt{\frac{r}{a}}$$

$$\alpha = 1 - \beta \Rightarrow 1 - \left(\frac{1}{r} \pm \sqrt{\frac{r}{a}}\right) \Rightarrow \alpha = \frac{1}{r} - \sqrt{\frac{r}{a}} \leq \frac{1}{r} + \sqrt{\frac{r}{a}} \quad \text{نفي}$$

$$|\alpha - \beta| = \left| \left(\frac{1}{r} - \sqrt{\frac{r}{a}}\right) - \left(\frac{1}{r} + \sqrt{\frac{r}{a}}\right) \right| = \frac{2\sqrt{r}}{a} \quad \checkmark$$

$$\alpha_1 + \alpha_r = a + 1, \alpha_1 \alpha_r = a \xrightarrow{\text{مجموع}} (r-1) + (r+1) = 2r = a + 1 \Rightarrow r-1 = a \quad (1)$$

$$(r-1)(r+1) = r^2 - 1 = a \xrightarrow{(1)} r^2 - 1 = r - 1 \Rightarrow r(r-1) = 0 \Rightarrow r = 1 \quad (2)$$

$$(1) \Rightarrow \alpha_1 = 1, \alpha_r = r, a = r$$

$$\beta_1 + \beta_r = ra + 1 = 10, \beta_1 + \beta_r = rm + (rm + r) = 2rm + r = 10 \Rightarrow m = r$$

$$\beta_1 = r, \beta_r = r \Rightarrow \beta_1 \cdot \beta_r = r \times r = r^2$$

$$|\alpha_1 \alpha_r - \beta_1 \beta_r| = |1 \times r - r^2| = r \quad \checkmark$$

$$\alpha + \beta = -1, \alpha \cdot \beta = -1 - m^r \Rightarrow \alpha^r + \beta^r = (\alpha + \beta)^r - r\alpha \cdot \beta$$

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

$$m^r \geq 0 \Rightarrow m^r = 0 \Rightarrow \alpha^r + \beta^r = r + r(0) = r \quad \checkmark$$

$$\frac{r+(-a)}{r} = -1 \text{ صواب} \Rightarrow y = a(x - (-1))^r + 1 \quad (1), \alpha = -1 + d, \beta = -1 - d \quad (2)$$

$$(1) \Rightarrow a(x+1)^r = -1 \Rightarrow (x+1)^r = -\frac{1}{a} = d^r(-1+d)^r + (-1-d)^r = r + rd^r = -a \quad (3)$$

$$\Rightarrow d^r = \frac{r}{a} = -\frac{1}{a} \Rightarrow a = -\frac{r}{r} = -1 \Rightarrow x = 0 \rightarrow y = a(1)^r + 1$$

$$\xrightarrow{a=-1} y = 1 - \frac{r}{r} = \frac{1}{r} \quad \checkmark$$