

$$A = |a|$$

$$\frac{-b}{r} = -1 \rightarrow b = r$$

$$\frac{-\Delta}{r} = 9 \rightarrow -b^2 + 4ac = 81$$

$$-r^2 + 4ac = 81$$

$$-a + c = 9$$

$$c = 9 + a$$

$$c = 9, 0$$

$$1 = 9a + r^2b + c$$

$$1 = 18a + 9 + c$$

$$0 = 18a + 1$$

$$0 = 1(18a + 1)$$

$$a = -\frac{1}{18}$$

$$b = 1$$

$$y = ax^2 + bx + c$$

$$y = -\frac{1}{18}x^2 + x + \frac{14}{9}$$

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$$rx^2 + mx + m + 4 = 0$$

$$\frac{c}{a} > 0 \rightarrow \frac{m+4}{r} > 0 \rightarrow m > -4$$

$$\frac{-b}{a} > 0 \rightarrow \frac{-m}{r} > 0 \rightarrow m < 0$$

$$\Delta > 0 \rightarrow m^2 - 4m - 16 > 0 \rightarrow m = \frac{4 \pm \sqrt{16 + 64}}{2} = \frac{4 \pm 8}{2}$$

$$m \in (-4, -8)$$

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

$$\Delta > 0$$

$$\frac{-b}{a} = \frac{a}{c}$$

$$ar = -bc \rightarrow 9 = (m-r)(r-m-1)$$

$$9 = rm - m - r + m + 1$$

$$0 = rm - m - r$$

$$0 = m^2 - 8m - 16$$

$$= (m-4)(m+4) = 0$$

$$m = 4, -4$$

$$x^2 - x - 8 = 0 \rightarrow \alpha^2 - \alpha - 8 = 0$$

$$\alpha + \beta = 1$$

$$\alpha\beta = -8$$

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

$$= 1 + 16 = 17$$

$$x^2 - 5x + 4 = 0$$

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

$$x^2 - \left(17 + \frac{1}{\alpha\beta}\right)x + \frac{(\alpha\beta)^2 + \alpha^2 + \beta^2 + 1}{\alpha\beta} = 0$$

$$x^2 - 17,75x - 0,5 = 0$$

$$\left(\sqrt{x^2} + \frac{1}{\sqrt{x^2}} + 1\right)\left(\sqrt{x^2} - 1\right) = \sqrt{x^2}$$

$$\left(\sqrt{x^2} + \frac{1}{\sqrt{x^2}} + 1\right)\left(\sqrt{x^2} - \frac{1}{\sqrt{x^2}}\right) = 1$$

$$x - \frac{1}{x} = 1 \rightarrow x^2 - x - 1 = 0 \rightarrow x = \frac{1 \pm \sqrt{5}}{2}$$

$$x_1 = 1 + \sqrt{5}, x_2 = 1 - \sqrt{5}$$

$$rx^2 + ax + f = 0$$

$$\alpha = r\beta$$

$$\frac{c}{a} = r\beta^2 \rightarrow r\beta^2 = \frac{f}{r} \Rightarrow \beta^2 = \frac{f}{r^2} \Rightarrow \beta = \pm \frac{\sqrt{f}}{r}$$

$$\frac{-b}{a} = r\beta \rightarrow \frac{a}{r} = r\beta \rightarrow \alpha = 1r\beta$$

$$\alpha = 1$$

$$\alpha = -1$$

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