

$y = ax^2 + px + a$ $\frac{y}{x} \rightarrow \frac{-\Delta}{2a} = \frac{V}{\Lambda} \rightarrow \frac{fa^2 - q}{2a} = \frac{V}{\Lambda} \rightarrow \Lambda a = \frac{2fa^2 - V\Lambda}{\Lambda}$
 $\Lambda^2 a^2 - 2\Lambda a - V^2 = 0 \rightarrow \Lambda(\Lambda a^2 - Va - \Lambda) = 0 \rightarrow \Lambda a^2 - Va - \Lambda = 0 \rightarrow \Lambda a = \frac{V \pm \sqrt{V^2 + 4\Lambda a}}{2}$
 $\frac{V^2}{4} = 2$ ✓
 $\frac{-V}{2} = 0$ ✓
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$x^2 - (a+1)x + a = 0$ $\frac{\Delta}{4a^2} \rightarrow 2: b$ $\frac{\sqrt{\Delta}}{|a|} = 2 \rightarrow \sqrt{(a-1)^2}$
 $\rightarrow |a-1| = 2 \rightarrow a = 3$ $x^2 - 4x + 3 \rightarrow (x-1)(x-3) \rightarrow 1, 3$
 $a = -1$ ✓
 $x^2 - (2a+1)x + b = 0$ $a = 3 \rightarrow x^2 - 10x + b = 0$ $\frac{\sqrt{\Delta}}{|a|} = 2 \rightarrow \sqrt{100 - 4b} = 2$
 $100 - 4b = 4 \rightarrow b = 24$ $25 - 3 = 22$ ✓

$y = -ax^2 + ax + 2$ $\frac{-b}{2a} \rightarrow \frac{-a}{-2a} = \frac{1}{2}$ $\frac{-a}{2} + \frac{a}{2} + 2 \rightarrow \frac{\Lambda + a}{2} \rightarrow 2$
 $y = 2bx^2 - bx - 1$ $\frac{-b}{2a} \rightarrow \frac{-b}{4b} = -\frac{1}{4}$ $\frac{-b}{4} + \frac{b}{4} - 1 \rightarrow \frac{-(b+1)}{4}$
 $\frac{-a}{2a} + \frac{a}{2a} + 2 = \frac{2a + 2}{2} = \frac{-(b+1)}{2} \rightarrow 2a + 2 = -(b+1) \rightarrow 2a + b = -3$
 $\frac{b}{2} - \frac{b}{2} - 1 = -1 = \frac{\Lambda + a}{2} \rightarrow a = -2$ $-3 + 2b = -3 \rightarrow b = 0$
 $b - a = -4 + 2 = -2$ ✓

$\alpha\beta = \frac{\beta}{2a\alpha}$ $\alpha + \beta = \frac{-f}{2a\alpha}$ $\alpha = \frac{1}{a}$ $\beta = \frac{f}{2} - \frac{1}{2} = -1 \rightarrow \beta < \alpha$ ✓
 $\alpha = \frac{1}{a}$ $\beta = \frac{f}{2} + \frac{1}{2} = 1 \rightarrow \beta > \alpha$ ✓
 $\alpha = \frac{1}{a}, \beta = 1$
 $-a(\frac{1}{a})^2 + f(\frac{1}{a}) + 1 = \frac{-b}{2a} = \frac{1}{a}$
 $y > 0, x > 0 \rightarrow$ $y = -ax^2 + fx + 1$

$x^2 - (a^2 + b^2 - 1)x + a + b - 1 = 0$
 $s^2 - 2p$ $p = s - 1$
 $\rightarrow s = s^2 - 2p - 1 \xrightarrow{p = s - 1} s^2 - 2s - 1 = 0$ $\frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \frac{3 \pm \sqrt{49}}{2}$
 $\frac{3 + 7}{2} = 5$ ✓
 $\frac{3 - 7}{2} = -2$ ✓