

## Rumus Akar Persamaan Kuadrat (rumus ABC)

Persamaan kuadrat  $ax^2 + bx + c = 0$  dimana  $a \neq 0$   
Maka akar-akarnya adalah:

$$\begin{aligned} & ax^2 + bx + c = 0 \\ \Leftrightarrow & x^2 + \frac{b}{a}x + \frac{c}{a} = 0 \\ & \qquad \qquad \qquad = 0 \\ \Leftrightarrow & x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2 - \left(\frac{b}{2a}\right)^2 + \frac{c}{a} = 0 \\ \Leftrightarrow & \left[x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2\right] - \left[\frac{b^2 - 4ac}{4a^2}\right] = 0 \\ \Leftrightarrow & \left[\left(x + \frac{b}{2a}\right)^2 - \left(\frac{b^2 - 4ac}{(2a)^2}\right)\right] = 0 \\ \Leftrightarrow & \left[\left(x + \frac{b}{2a}\right) + \frac{\sqrt{b^2 - 4ac}}{2a}\right] \left[\left(x + \frac{b}{2a}\right) - \frac{\sqrt{b^2 - 4ac}}{2a}\right] = 0 \\ \Leftrightarrow & x + \frac{b}{2a} + \frac{\sqrt{b^2 - 4ac}}{2a} = 0 \quad \text{atau} \quad x + \frac{b}{2a} - \frac{\sqrt{b^2 - 4ac}}{2a} = 0 \\ \Leftrightarrow & x = \frac{-b - \sqrt{b^2 - 4ac}}{2a} \quad \text{atau} \quad x = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \end{aligned}$$

Jadi akar-akar persamaan kuadrat  $ax^2 + bx + c = 0$  adalah

$$x_1 = \frac{-b - \sqrt{b^2 - 4ac}}{2a} \quad \text{dan} \quad x_2 = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

Atau

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$