

Menyederhanakan Bentuk Akar 2

$$\sqrt{a \pm \sqrt{b}} = \sqrt{\frac{a + \sqrt{a^2 - b}}{2}} \pm \sqrt{\frac{a - \sqrt{a^2 - b}}{2}}$$

Cek:

Misalkan $x = \sqrt{\frac{a + \sqrt{a^2 - b}}{2}} + \sqrt{\frac{a - \sqrt{a^2 - b}}{2}}$, maka

$$\begin{aligned}x^2 &= \left(\sqrt{\frac{a + \sqrt{a^2 - b}}{2}} + \sqrt{\frac{a - \sqrt{a^2 - b}}{2}} \right) \left(\sqrt{\frac{a + \sqrt{a^2 - b}}{2}} + \sqrt{\frac{a - \sqrt{a^2 - b}}{2}} \right) \\&= \frac{a + \sqrt{a^2 - b}}{2} + \frac{a - \sqrt{a^2 - b}}{2} + 2 \sqrt{\frac{a + \sqrt{a^2 - b}}{2}} \cdot \sqrt{\frac{a - \sqrt{a^2 - b}}{2}} \\&= \frac{2a}{2} + 2 \sqrt{\frac{a^2 - (a^2 - b)}{4}} \\&= a + \sqrt{b}\end{aligned}$$

$$x = \sqrt{a + \sqrt{b}}$$

Jadi,

$$\sqrt{a + \sqrt{b}} = \sqrt{\frac{a + \sqrt{a^2 - b}}{2}} + \sqrt{\frac{a - \sqrt{a^2 - b}}{2}}$$

Dengan cara sama kita akan mendapatkan,

$$\sqrt{a - \sqrt{b}} = \sqrt{\frac{a + \sqrt{a^2 - b}}{2}} - \sqrt{\frac{a - \sqrt{a^2 - b}}{2}}$$

