

$$\frac{12+2\sqrt{3}}{\sqrt{3}} - 6\sqrt{\frac{1}{3}} - \frac{\sqrt{48}}{\sqrt{3}-1}$$

---

Der Term wird auf Normalform gebracht:

$$\frac{12+2\sqrt{3}}{\sqrt{3}} = \frac{12}{\sqrt{3}} + \frac{2\sqrt{3}}{\sqrt{3}} = \frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} + 2 = \frac{12\sqrt{3}}{3} + 2 = 4\sqrt{3} + 2$$

$$6\sqrt{\frac{1}{3}} = 6\sqrt{\frac{3}{9}} = 6 \cdot \frac{\sqrt{3}}{3} = 2\sqrt{3}$$

$$\frac{\sqrt{48}}{\sqrt{3}-1} = \frac{\sqrt{16 \cdot 3}}{\sqrt{3}-1} = \frac{4\sqrt{3}}{\sqrt{3}-1} \cdot \frac{\sqrt{3}+1}{\sqrt{3}+1} = \frac{4 \cdot 3 + 4\sqrt{3}}{3-1} = (12 + 4\sqrt{3}) : 2 = 6 + 2\sqrt{3}$$

Daraus ergibt sich:

$$\begin{aligned} \frac{12+2\sqrt{3}}{\sqrt{3}} - 6\sqrt{\frac{1}{3}} - \frac{\sqrt{48}}{\sqrt{3}-1} &= (4\sqrt{3} + 2) - 2\sqrt{3} - (6 + 2\sqrt{3}) \\ &= 4\sqrt{3} + 2 - 2\sqrt{3} - 6 - 2\sqrt{3} = -4 \end{aligned}$$