Math Formulas: Roots Formulas

Notation:

a, b : bases ($a \geq 0, b \geq 0$ if $n = 2k$)

n, m: powers

Formulas

1. $$\left(\sqrt[n]{a}\right)^n = a$$
2. $$\left(\sqrt[n]{a}\right)^m = \sqrt[n]{a^m}$$
3. $$\sqrt[m]{\sqrt[n]{a}} = \sqrt[nm]{a}$$
4. $$\left(\sqrt[n]{a^m}\right)^p = \sqrt[n]{a^{np}}$$
5. $$\sqrt[n]{a^m} = \sqrt[np]{a^{np}}$$
6. $$\frac{1}{\sqrt[n]{a}} = \frac{\sqrt[n]{a^{n-1}}}{a}$$
7. $$\sqrt[n]{ab} = \sqrt[n]{a} \cdot \sqrt[n]{b}$$
8. $$\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$$
9. $$\frac{\sqrt[n]{a}}{\sqrt[m]{b}} = \sqrt[nm]{\frac{a^m}{b^n}}$$
10. $$\sqrt[n]{a} \cdot \sqrt[m]{b} = \sqrt[nm]{a^m b^n}$$
11. $$\sqrt{a \pm \sqrt{b}} = \sqrt{\frac{a + \sqrt{a^2 - b}}{2}} \pm \sqrt{\frac{a - \sqrt{a^2 - b}}{2}}$$
12. $$\frac{1}{\sqrt{a} \pm \sqrt{b}} = \frac{\sqrt{a} \mp \sqrt{b}}{a - b}$$