Properties of Radicals

Name ____________________

Let *a* and *b* be real numbers, variables, or algebraic expressions, and let *m* and *n* be integers. All denominators and bases are nonzero.

$$\sqrt[m]{a^n} = \left(\sqrt[m]{a}\right)^n$$

$\sqrt[3]{27^2} =$

$\sqrt{4^6} =$

$(-125)^{-2/3} =$

When solving an equation like $x^2 = 4$, we know that the inverse operation of squaring is taking the square root.

$\sqrt{x^2} = \pm\sqrt{4}$ so, $x = \pm 2$

What is the square root as an exponent?

$(x^2)^? = x$

$$\sqrt[m]{a} = a^{\overline{}}$$

$$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$$

$\sqrt{5} \cdot \sqrt{11} =$

$\sqrt[3]{6x} \cdot \sqrt[3]{18x^2} =$

Observations:

$\sqrt[3]{y} =$

$\sqrt[4]{z} =$

$\sqrt[5]{a} =$

$\sqrt[4]{x^2} =$

$$\sqrt[m]{\sqrt[n]{a}} = \sqrt[mn]{a}$$

$\sqrt[3]{\sqrt{27}} =$

$$\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$$

$\frac{\sqrt[4]{27}}{\sqrt[4]{9}} =$

$\frac{\sqrt[3]{80x^7}}{\sqrt[3]{5x}} =$

$(2x + 1)^{-1/2}(2x+1)^{5/2} =$

$$\sqrt[n]{a^n} = a$$

if n is odd

$$\sqrt[n]{a^n} = |a|$$

if n is even

$\sqrt[4]{x^4} =$

$\sqrt[3]{-192y^3} =$