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Properties of Rational Exponents

Name _____

Date _____ Period _____

Product of Powers

$$a^m \cdot a^n = a^{m+n}$$

Quotient of Powers

$$\frac{a^m}{a^n} = a^{m-n}$$

Power of a Power

$$(a^m)^n = a^{m \cdot n}$$

Power of Product

$$(ab)^m = a^m b^m$$

Power of Quotient

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

Zero Exponent

$$a^0 = 1$$

Negative Exponent

$$a^{-m} = \frac{1}{a^m}$$

Simplify the following expressions.

$$3^{\frac{2}{3}} \cdot 3^{\frac{4}{3}}$$

$$4^{\frac{1}{4}} \cdot 4^{\frac{1}{4}}$$

$$8^{\frac{4}{3}} \cdot 8^{-1}$$

Simplify the following expressions.

$$\frac{6^{\frac{5}{2}}}{6^{\frac{1}{2}}}$$

$$\frac{8^{\frac{1}{3}}}{8^{\frac{2}{3}}}$$

Simplify the following expressions.

$$(125^{3})^{\frac{1}{9}}$$

$$(8 \cdot 27)^{\frac{1}{3}}$$

$$\left(5^{\frac{1}{2}}\right)^{4}$$

$$\left(\frac{2^{3}}{27}\right)^{\frac{1}{3}}$$

Product of Powers

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