



Warm Up

Simplify (leave solutions with positive exponents)

a) $n^{-5}(n^4)^{-3}$

power of a power (mult exp)

$$= n^{-5} n^{-12}$$

product law → add exp

$$= n^{-17}$$

$$= \frac{1}{n^{17}}$$

b) $\left(\frac{n^3}{n^{-3} \cdot 2n^2}\right)^4$

product law

$$= \left(\frac{n^3}{2n^{-1}}\right)^4$$

quotient law

$$= \left(\frac{n^3}{2}\right)^4$$

power of quotient

$$= \frac{n^{12}}{2^4}$$

$$= \frac{n^{12}}{16}$$

c) $\frac{2m^{-4} \cdot ((2m^{-3})^4 (2m^{-3})^4)}{2m^2}$

$$= \frac{2m^{-4} (2^4 m^{-12} 2^4 m^{-12})}{2m^2}$$

$$= \frac{2m^{-4} (2^8 m^{-24})}{2m^2}$$

$$= \frac{2^1 m^{-4} 2^8 m^{-24}}{2m^2}$$

$$= \frac{2^9 m^{-28}}{2m^2}$$

$$= 2^8 m^{-30}$$

$$= \frac{2^8}{m^{30}}$$

$$= \frac{256}{m^{30}}$$

Homework

Worksheet Solutions

Laws of exponents Practice Worksheet

Simplify. Your answer should contain only positive exponents.

$$1) \frac{2u^3v^3 \cdot (3u^2)^2}{2u^2}$$

$9u^5v^3$

$$2) \frac{(4xy^2)^3}{(4y^3)^4 \cdot 2y^3} \cdot \frac{x^2}{8y^9}$$

$$3) \frac{(4uv^2)^2}{3u^2v^4 \cdot 3v^2} \cdot \frac{16}{9v^2}$$

$$4) \left(\frac{4a^4b^3}{3a^4b^3 \cdot 4a^3b^4} \right)^3 \cdot \frac{27a^3}{4}$$

$$5) \left(\frac{3y^3 \cdot 3x^3y^4}{4x^4y^2} \right)^4 \cdot \frac{6561y^{20}}{256x^4}$$

$$6) \left(\frac{3xy^4 \cdot 3x^3y^2}{yx^4} \right)^3$$

$729y^{15}$

$$7) \frac{2ba^2}{4a(2a^3b^4)^3} \cdot \frac{1}{16a^8b^{11}}$$

$$8) \frac{(2x^2y^2)^4}{(2x^2 \cdot (yx^2)^3)^2} \cdot \frac{4y^2}{x^8}$$

$$9) \frac{(m^2n^2)^2}{3m^4n^2 \cdot 2m^3n^2} \cdot \frac{1}{6m^3}$$

$$10) \frac{x^2}{4x^4y^2 \cdot (3x^4y^2)^2}$$

$$11) \left(\frac{n}{m \cdot 2m^4n^4} \right)^4 \cdot \frac{1}{16m^{20}n^{12}}$$

$$12) \left(\frac{3x^2y^3 \cdot 4x^3y^2}{3xy^3} \right)^4$$

$256x^{16}y^8$

$$13) \left(\frac{3x^2y^4 \cdot x^3y^3}{(2x^2y^3)^4} \right)^2 \cdot \frac{9}{256x^6y^{10}}$$

$$14) \left(\frac{2u^4v^3 \cdot 2uv^3}{4u^3} \right)^4$$

$4^8 \cdot \sqrt[4]{9}$

$$15) \frac{3uv^2}{2u^3v^2 \cdot (2v^2)^2} \cdot \frac{3}{8u^2v^4}$$

$$16) \frac{(4y)^3}{4y \cdot 3y^2} \cdot \frac{16}{3}$$

Class/Homework (Net 3 pages too)

Test Review

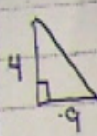
1) Evaluate $\sqrt[3]{\frac{125}{8}}$ (No decimals) = $\frac{\sqrt[3]{125}}{\sqrt[3]{8}} = \frac{5}{2}$

2) Which roots lies between 5 and 6?
 $\sqrt[3]{100}$, $\sqrt[4]{16}$, $\sqrt[3]{130}$, $\sqrt{89}$
 $\sqrt[3]{64}$ $\sqrt[3]{125}$

3) Which of these numbers is a rational number? (list them) How do you know?
 $\sqrt{52}$, $\sqrt[3]{-125}$, $\sqrt{4.9}$, $\sqrt{\frac{81}{36}}$

4) You can use a calculator. Determine which of these numbers is the least.
 $\sqrt{28}$, $\sqrt[3]{40}$, $\sqrt[5]{301}$, $\sqrt[3]{-83}$

5) Give an example of a number that is an integer but not whole? _____
 Give an example of a whole number but is not an integer? _____
 What number is a whole number but not natural? _____

6)  Find the value of d ? (leave in radical form)

7) write $\sqrt[3]{648}$ in simplest form

8) write $\sqrt{605}$ in simplest form

9) write a) $4\sqrt[3]{7}$, b) $5\sqrt{10}$ as an entire radical

10) write $71^{\frac{3}{4}}$ as a radical (do not evaluate)

11) write each of the following as a power (do not evaluate)

a) $(\sqrt[3]{6})^2$ b) $(\sqrt[5]{11})^3$ c) $\sqrt{\left(\frac{7}{9}\right)^3}$ d) $\sqrt[5]{\left(\frac{5}{6}\right)^2}$

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Test Review

1) Write a) $8.4^{0.75}$ as a radical (hit \rightarrow always change decimal radicals to fraction)
 b) $7.5^{1.25}$ \leftarrow on test

3) Evaluate a) $\left(\frac{343}{816}\right)^{\frac{2}{3}}$ b) $\left(\frac{1024}{10807}\right)^{-\frac{3}{5}}$ c) $125^{\frac{-2}{5}}$
 without calculator
 use seeds

4) Which power with a negative exponent is equivalent to $\frac{1}{9}$?
 a) 3^{-2} b) 3^{-2} c) 2^{-3} d) $(-2)^3$

5) For each of the following use laws of exponents. (Express all answers with positive exponents)

a) $[(-3x^4y^2)(7xy^3)]^{-2}$ b) $\left(\frac{x^7y^3z}{x^{11}yz}\right)^2$

c) $\left(\frac{3x^4}{z^2}\right)^{-5}$ d) $\frac{(4xy^2)(3x^2y^3)^4}{12x^{-4}y^3}$

e) $\left(\frac{3a^{-7}b^5}{4}\right)^{-2}$