

# Homework

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Questions

3ac, 4ac, 5ac, 6ac

8aceg 9aceg

Any Questions???

We can do it on the board  
if there is something that  
you do not understand.

1) Simplify Radical (Entire  $\rightarrow$  mix)

$$a) \sqrt[3]{135} = \sqrt[3]{27 \times 5}$$

$$\sqrt[3]{27} \times \sqrt[3]{5}$$

$$3 \sqrt[3]{5}$$

2) Write each power as a radical then evaluate

$$512^{\frac{2}{3}} \leftarrow \text{index} = \left( \sqrt[3]{512} \right)^2$$

$$(8)^2$$

$$64$$

3) Write radical as a power

$$a) \sqrt[3]{729}$$

$$729^{\frac{1}{3}}$$

4) Express each with a positive exponent

$$a) \frac{1}{3^{-2}}$$

$$3^2$$

$$b) 4^{-2}$$

$$\frac{1}{4^2}$$

$$c) \left( \frac{2}{3} \right)^{-5} = \frac{2^{-5}}{3^{-5}}$$

$$\left( \frac{3}{2} \right)^5 \quad \frac{3^5}{2^5}$$

5) Laws of Exponents

$$a) \frac{3x^2y^4}{(x^5y^2)} = \frac{3x^2y^4}{x^5y^2} = 3x^{-3}y^2$$

$$= \frac{3y^2}{x^3}$$

**Example 1****Evaluating Powers with Negative Integer Exponents**

Evaluate each power.

a)  $3^{-2}$       b)  $\left(-\frac{3}{4}\right)^{-3}$       c)  $0.3^{-4}$

**Remember  
Already did****SOLUTION**

a)  $3^{-2} = \frac{1}{3^2}$   
 $= \frac{1}{9}$

b)  $\left(-\frac{3}{4}\right)^{-3} = \left(-\frac{4}{3}\right)^3$   
 $= -\frac{64}{27}$

(Solution continues.)

**Example 2****Evaluating Powers with Negative Rational Exponents**

Evaluate each power without using a calculator.

a)  $8^{-\frac{2}{3}}$

b)  $\left(\frac{9}{16}\right)^{-\frac{3}{2}}$

**Remember  
Already did**

**SOLUTION**

a)  $8^{-\frac{2}{3}} = \frac{1}{8^{\frac{2}{3}}}$

Write with a positive exponent.

$$= \frac{1}{(\sqrt[3]{8})^2}$$

Take the cube root.

$$= \frac{1}{2^2}$$

Square the result.

$$= \frac{1}{4}$$

(Solution continues.)

## Laws of exponents Practice Worksheet

Simplify. Your answer should contain only positive exponents.

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

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

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

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

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

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

7)  $\frac{2ba^2}{4a(2a^3b^4)^3}$

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

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

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

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

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

$256x^{16}y^8$

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

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

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

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