

Homework

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Questions

3ac, 4ac, 5ac, 6ac

8acg 9acg

Any Questions???

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

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.)

CHECK YOUR UNDERSTANDING

3. Simplify. Explain your reasoning.

$$\text{a) } (25a^4b^2)^{\frac{3}{2}}$$

$$= 25^{\frac{3}{2}} a^{\frac{12}{2}} b^{\frac{6}{2}}$$

$$= (\sqrt{25})^3 a^6 b^3$$

$$= (5)^3 a^6 b^3$$

$$= 125 a^6 b^3$$

$$\text{b) } (x^3y^{-\frac{3}{2}})(x^{-1}y^{\frac{1}{2}})$$

$$= \underbrace{x^3 \cdot x^{-1}} y^{-\frac{3}{2}} y^{\frac{1}{2}}$$

$$= x^2 y^{-2/2}$$

$$= x^2 y^{-1}$$

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



4.6 Applying the Exponent Laws

Answers: a)

b)

$$\begin{aligned}
 \text{c) } & \frac{12x^{-5}y^{\frac{5}{2}}}{3x^{\frac{1}{2}}y^{-\frac{1}{2}}} \\
 & = \frac{12}{3} x^{-5-\frac{1}{2}} y^{\frac{5}{2}-(-\frac{1}{2})} \\
 & = 4 x^{-\frac{10}{2}-\frac{1}{2}} y^{\frac{5}{2}+\frac{1}{2}} \\
 & = 4 x^{-\frac{11}{2}} y^{\frac{6}{2}} \\
 & = \frac{4 y^3}{x^{\frac{11}{2}}}
 \end{aligned}$$

$y^{\frac{5}{2}} - (-\frac{1}{2})$
 $y^{\frac{5}{2} + \frac{1}{2}}$
 $y^{\frac{6}{2}}$

↓ add ↓ off
 + +
 ↓

$$\begin{aligned}
 \text{d) } & \left(\frac{50x^2y^4}{2x^4y^7} \right)^{\frac{1}{2}} \\
 & = \left(25x^{-2}y^{-3} \right)^{\frac{1}{2}} \\
 & = 25^{\frac{1}{2}} x^{-2 \cdot \frac{1}{2}} y^{-3 \cdot \frac{1}{2}} \\
 & = \sqrt{25} x^{-1} y^{-\frac{3}{2}} \\
 & = \frac{5}{xy^{\frac{3}{2}}}
 \end{aligned}$$

Answers: c) $\frac{4y^3}{x^{\frac{11}{2}}}$

d) $\frac{5}{xy^{\frac{3}{2}}}$

$$\begin{aligned} & x^4 y^3 \cdot (2x^{-1} y^0)^{-4} \\ & = \underline{x^4} \underline{y^3} \quad 2^{-4} \underline{x^4} \cancel{y^0} \\ & = 2^{-4} \underline{x^4 x^4} y^3 \\ & = \frac{x^8 y^3}{2^4} \\ & = \frac{x^8 y^3}{16} \end{aligned}$$

$$\frac{2p}{(\cancel{p^4})^0 \cdot 2p^4}$$

$$\frac{2p^1}{2p^4} = 1p^{-3} = \frac{1}{p^3}$$

$$\frac{4a^{-3}b^{-4}}{4ba^{-3}}$$

$$4ba^{-3}$$

$$\frac{4}{4} a^{-3-+3} b^{-4-1}$$

$$1 \cancel{a} b^{-5}$$

$$\frac{1}{b^5}$$