Warmup $10/(-4 - (-30))$

Simplify all:

1. $(-2)^4$ **16**
2. 2^{-4} $\frac{1}{16}$
3. -2^4 **−16**
4. $(-2)^{-4}$ $-\frac{1}{16}$

5. $16x^0$ **16**
6. xyz^0 xy

Simplify:

$$16x^0$$

$$(16x)^0$$

Quiz Friday!
All Exponent Rules

GO OVER HOMEWORK

Whiteboards!

- **ADVICE:**
  - Even though today's problems will be on whiteboards, if there is something you feel like would be helpful to review, you should copy it in your notes.

Simplify TWO different ways:

- **By using the _shortcut_**
- **By _expanding it out_**

$$\frac{b^3}{b^3}$$

Does this help you see why anything to the zero power is one???

Simplify TWO different ways:

- **By using the <u>shortcut</u>**
- **By <u>expanding it out</u>**

$$\frac{c^3}{c^7}$$

Does this help you understand how negative exponents work?

IMPORTANT

- An expression that contains negative or zero exponents is not considered to be simplified. Expressions should be rewritten with **only positive exponents.**

Simplify:

$$x^5 \cdot x^{-8}$$

Simplify:

$$2m^{-3}$$

Examples

5. $\left(3x^4 \cdot x^2\right)^5$ $\left(3x^6\right)^5$ $= 243x^{30}$

6. $\left(\frac{m^3}{m^8}\right)^4$ $\left(m^{-5}\right)^4$ $= m^{-20}$ $= \frac{1}{m^{20}}$

7. $\left(\frac{4g^{50}}{12g^{30}}\right)^2$ $\left(\frac{g^{20}}{3}\right)^2$ $= \frac{g^{40}}{9}$

$$\frac{a^6 b^2}{a^2 b^6}$$

$$\frac{a^4}{b^4}$$

Division and Negative Exponents

1. $\frac{15x^2}{45x^7}$ $\frac{1}{3x^5}$

3. $\frac{20z^{25}}{4z^{25}}$ 5

2. $\frac{16y}{32y^8}$ $\frac{1}{2y^7}$

4. $\frac{100xy^2}{5xy^{40}}$ $\frac{20}{y^{38}}$

Remember how these work?

1. $\left(\frac{1}{2}\right)^{-3}$ 8

2. $\left(\frac{6}{7}\right)^{-2}$ $\frac{49}{36}$

3. $\left(\frac{7}{2}\right)^{-1}$ $\frac{2}{7}$

What about:

$$\frac{1}{x^{-5}}$$

$$= x^5$$

- Simplify using the zero & negative exponent properties.

1. $\frac{10s^{-3}}{5t^{-5}}$ $\frac{2t^5}{s^3}$

2. $\frac{4fg^{-3}}{16x^{-5}}$ $\frac{2fx^5}{4g^3}$

3. $\frac{x^3y^{-2}}{w^0x^{-5}}$ $\frac{x^8}{y^2}$

Homework

Worksheet