

Negative Exponents

Tuesday, November 24, 2015 12:17 PM

Warmup:

Simplify as a power: $\frac{2^3}{2^5} = 2^{3-5} = 2^{-2}$ } negative exponents.

~~What do you notice?~~ $\frac{2 \times 2 \times 2}{2 \times 2 \times 2 \times 2 \times 2} = \frac{1}{2 \times 2} = \frac{1}{2^2}$

Now, expand as a repeated multiplication, cancel, and evaluate.

What is the shortcut for negative exponents?

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

Ex1: Simplify, then evaluate:

a) 4^{-2}
 $= \frac{1}{4^2}$

b) 2^{-5}
 $= \frac{1}{2^5}$

c) 76^{-1}
 $= \frac{1}{76^1} = \frac{1}{76}$

Bonus questions for the test.

Ex2: Simplify, then evaluate: c $\left(\frac{3}{-2}\right)^{-2}$

Ex3 – Simplify:

a) $[(-2)^2]^{-3} \times (-2)^2$

b) $\left(\frac{1}{4}\right)^{-2} - \left(\frac{2^7 \times 2^{-5}}{2^3}\right)$

Assignment: Ch 2 Review → Due Tuesday
(hand in before test!)

What to know for the Test

- what is a power? Parts? Evaluating powers
- Writing a number using powers of 10
- scientific notation
- order of operations with powers
- Laws: $a^x \cdot a^y = a^{x+y}$ $(a^x)^y = a^{xy}$ $\left(\frac{a}{b}\right)^y = \frac{a^y}{b^y}$
 $\frac{a^x}{a^y} = a^{x-y}$ $(ab)^y = a^y b^y$

Reflection: A common error when working with negative exponents is shown here in an example: $2^{-3} = -8$. Why is this wrong and what is 2^{-3} ?