

DO NOW

Recall as many of the exponent rules as you can.

$$x^a \cdot x^b = x^{a+b}$$

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

$$(x^a)^b = x^{ab}$$

$$(mn)^a = m^a n^a$$

6.6 Zero and Negative Exponents

$$\frac{x^5}{x^5} = \frac{\overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}}}{\overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}}} = 1$$

$$\frac{x^5}{x^5} = x^{5-5} = x^0$$

$$x^0 = 1$$

★ Anything to the zero power is 1.

Examples:

1. y^0
1

2. $(xy)^0$
1

3. xy^0
 $x(1)$
 x

4. 50^0
1

5. $(6x)^0$
1

6. $6x^0$
 $6(1)$
 6

7. $7xy^0$
 $7x$

8. $7(xy)^0$
7

9. $(7xy)^0$
1

10. $35x^3y^0z^5$
 $35x^3z^5$

Consider: $\frac{x^2}{x^6} = \frac{\overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}}}{\overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}} \cdot \overset{1}{\cancel{x}}} = \frac{1}{x^4}$

$$\frac{x^2}{x^6} = x^{2-6} = x^{-4}$$

$$x^{-4} = \frac{1}{x^4}$$

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

★ A negative exponent is like an "elevator button"

★ Only relocate items that actually have the negative exponent.

Examples:

1. $\frac{1}{y^5}$

2. $\frac{1}{m^6}$

3. $\frac{3}{y^5}$

4. $\frac{5}{b^2}$

5. $\frac{x^2}{y^3}$

6. $\frac{c^3}{d^2}$

7. $\frac{n^5}{m^4}$

8. $\frac{-3}{y^4}$

9. $\frac{1}{(2x)^5}$
 $\frac{1}{2^5 x^5} = \frac{1}{32x^5}$

10. $\frac{2}{x^5}$

11. $\frac{1}{(2ab)^4}$
 $\frac{1}{2^4 a^4 b^4} = \frac{1}{16a^4 b^4}$

12. $\frac{2a}{b^4}$

HOMEWORK

Worksheet - HW 6.6