

**7-1 Zero and Negative Exponents**

Simplify each expression completely. Leave your answer in fraction form, if necessary. (1 pt each)

1.  $y^{-3} = \frac{1}{y^3}$

2.  $x^0 = 1$

3.  $4t^{-2} = 4 \cdot \frac{1}{t^2}$   
 $= \frac{4}{t^2}$

4.  $\frac{2}{y^{-5}} = \frac{2}{1} \cdot \frac{1}{y^{-5}}$   
 $= \frac{2}{1} \cdot \frac{1}{y^{-5}}$   
 $= 2y^5$

5.  $\frac{3^{-2}}{w} = \frac{1}{3^2} \cdot \frac{1}{w}$   
 $= \frac{1}{9w}$

6.  $2^{-4}x^2y^{-5}$   
 $= \frac{1}{2^4} \cdot \frac{x^2}{1} \cdot \frac{1}{y^5} = \frac{x^2}{16y^5}$

8. Suppose the population of a certain type of fox in Yellowstone National Park increases by 5% every year. This is modeled by the expression
- $P = 500(1.05)^y$
- , where
- $y$
- is the number of years since 2010.

- a. About how many foxes are predicted in the year 2020?

$$P = 500(1.05)^{10}$$
$$\approx 814.45$$

About 814 foxes are predicted in 2020.

(2)

- b. About how many foxes were there in the year 2000?

$$P = 500(1.05)^{-15}$$
$$\approx 240.51$$

There were about 241 foxes in 2000.

(2)