

Unit 5 Review

Word Problems

1. Determine whether the function $y = 3(5.2)^x$ represents exponential growth or decay? Growth $b > 1$

2. Suppose a population of 400 crickets' doubles in size every 4 months. How many crickets will there be after 3 years?

$$y = 400(2)^{\frac{36}{4}} = 204,800 \quad y = 400(2)^{\frac{3}{4}}$$

3. A car that cost \$15,000 decreases in value 4% per year. How much will the car cost in 6 years?

$$y = 15,000(0.96)^6 = 11,741.37$$

4. An initial population of 400 quail increases at an annual rate of 40%. Write an exponential function to model the quail population.

$$y = 400(1.40)^x$$

Inverses

1. Find the inverse of the following functions

a. $f(x) = \frac{x+6}{3}$ $x = \frac{y+6}{3}$ $3x - 6 = y$
 $3x = y + 6$

b. $f(x) = 4x - 16$ $x = \frac{y+16}{4}$ $y = \frac{x}{4} + 4$
 $x + 16 = 4y$

c. $f(x) = \frac{1}{3}x - 4$ $x = \frac{1}{3}y - 4$ $y = 3x + 12$
 $x + 4 = \frac{1}{3}y$

2. Determine if the graphs of the following functions have inverses that are also functions. EXPLAIN.

