## **4-3 Solving Exponential Functions**

## Determine if the exponential function is increasing or decreasing. EXPLAIN your answer.

1. The equation for the value of a collector's edition Batman comic book is  $V(t) = 20(1+.02)^{t}$ . Is the value increasing or decreasing in value each year? **How do you know?** 

2. The equation for the value of a certain car is  $V(t) = 20000(1-.025)^{t}$ . Is the value increasing or decreasing each year? How do you know?

Given the following equations, state the initial value and rate.

3. 
$$A(t) = 43000 \left(1 + \frac{.095}{4}\right)^{4t}$$
  
4.  $A(t) = 1800e^{.04t}$   
5.  $V(t) = 3000 (1 - .065)^{t}$   
Initial:  
Initial:

Rate:

Rate:

Solve the following using the appropriate exponential equation.

$$A(t) = P\left(1 \pm \frac{r}{n}\right)^{nt} \qquad A(t) = Pe^{rt} \qquad A(t) = a(1 \pm r)^{t}$$

Rate:

6. In 2000, the population of Lehi was 26,000, and was increasing at a rate of 8.5% per year. Use the given equation.  $P(t) = 26000(1+.085)^{t}$ 

a) Predict the population of Lehi in 2015.

b) When will the population reach 100,000?

7. John purchased a car in 2010 for \$23,000 and it depreciates at a rate of 4.5% per year. How much will the car be worth in 2018?

8. If Hugh invests \$1500 at 4% compounded quarterly, how much money will he have after 7 years?

9. If Bob invests \$2400 at 3.6% compounded **continuously**, how long will it take him to reach \$4800?