NAME _____ DATE _____ PERIOD _____

11-7

Practice

Modeling Real-World Data with Exponential and Logarithmic Functions

Find the amount of time required for an amount to double at the given rate if the interest is compounded continuously.

1. 4.75%
14.59 years

2. 6.25%
11.09 years

3. 5.125%
13.52 years

4. 7.1%
9.76 years

5. ***City Planning*** At a recent town council meeting, proponents of increased spending claimed that spending should be doubled because the population of the city would double over the next three years. Population statistics for the city indicate that population is growing at the rate of 16.5% per year. Is the claim that the population will double in three years correct? Explain.
No. To double in size, the population of the city would have to be increasing at the rate of 23.1% per year. The population of the city will double in 4.2 years.

6. ***Conservation*** A wildlife conservation group released 14 black bears into a protected area. Their goal is to double the population of black bears every 4 years for the next 12 years.

a. If they are to meet their goal at the end of the first four years, what should be the yearly rate of increase in population?
17.3%

b. Suppose the group meets its goal. What will be the minimum number of black bears in the protected area in 12 years?
There will be at least 112 black bears in the protected area.

c. What type of model would best represent such data?
An exponential model would best represent these data.

11-7

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1. Find $\cosh^2 x$

Prove each ide

2. $\sinh(-x) =$

sinh (–x)

3. $\sinh(x + y)$

sinh (x +