**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_  
Unit 4 Test Form A Exponential Functions**

1. If  and , what is ?



* 1. 48
  2. 192
  3. 768
  4. 190

1. The explicit formula for a geometric sequence is . What is the fifth term of the sequence?
   1. -96
   2. 48
   3. 192
   4. -48
2. The value (in millions of dollars) of a large company is modeled by: . What is the projected annual percent of growth and what is the initial value?
3. 10.4%; $241 million
4. 2.41%; $104 million
5. 241%; $4 million
6. 4%; $241 million
7. Write the recursive and explicit formula for the following sequence:

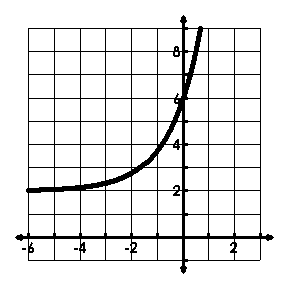
5, 10, 20, 40…

Recursive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Explicit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Write the recursive and explicit formula for the following sequence:

30, 5, 5/6, …

Recursive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Explicit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. Which function is shown by the graph?



1. 
2. 
3. 
4. 
5. Which models show are exponential decay models?
   * 1. 
     2. 
     3. 
     4. 
6. I and II
7. I and IV
8. II and III
9. III and IV

**Transforming Functions**

Given the following functions, describe the transformations.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Write an equation given the following transformation. From y = 2x

Reflects across the x-axis, right 2 and stretch by 4.

1. The student population in a high school increases by 3% a year. When it opened, the school had 1440 students.

* 1. Write a formula that models this situation.
  2. How many students will there be in 5 years?
  3. If the maximum number of students the school can hold is 1771, how many years will it take to reach that number?

1. A new car has a value of $35,000 and depreciates by 12% a year.
   1. Write a formula that models this situation.

* 1. What will be its value in 3 years?
  2. How many years will it take to have a value less than half the original price?

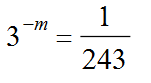
13.  A culture of bacteria doubles every hour.  If there are 500 bacteria at the beginning, how many bacteria will there be after 9 hours?

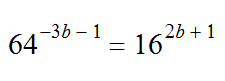
14.Given the following exponential Function answer the following questions?

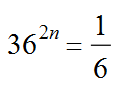
f(x) = 3500(.65)x

* + 1. What is the initial value?
    2. Is this a growth or decay?
    3. What is the rate of growth or decay?

**Solve.**



1.  16.

17. 18.

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_  
Unit 4 Test Form B Exponential Functions**

1. Which models show are exponential decay models?
   * 1. 
     2. 
     3. 
     4. 
2. I and II
3. I and IV
4. II and III
5. III and IV

**Transforming Functions**

Given the following functions, describe the transformations.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Write an equation given the following transformation. From y = 2x

Reflects across the x-axis, right 2 and stretch by 4.

1. If  and , what is ?



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  3. 768
  4. 190

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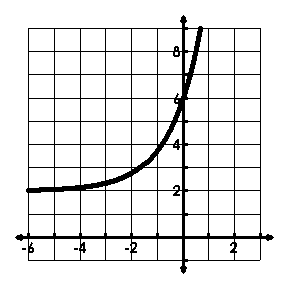
5, 10, 20, 40…

Recursive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Explicit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Write the recursive and explicit formula for the following sequence:

30, 5, 5/6, …

Recursive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Explicit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



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1. A new car has a value of $35,000 and depreciates by 12% a year.

A. Write a formula that models this situation.

B. What will be its value in 3 years?

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14. Given the following exponential Function answer the following questions?

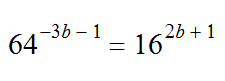
f(x) = 3500(.65)x

a. What is the initial value?

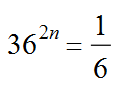
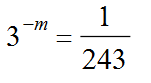
B. Is this a growth or decay?

C. What is the rate of growth or decay?

**Solve.**

1.  16.



17. 18.