

# 7.1 Exponential Growth

Algebra 1

Name: \_\_\_\_\_

**CA #1**

**Are the following functions linear, exponential or neither?**

|                      |                  |                          |                 |                |
|----------------------|------------------|--------------------------|-----------------|----------------|
| 1. $f(x) = -8(12)^x$ | 2. $f(x) = 7x^3$ | 3. $f(x) = 2 \cdot 11^x$ | 4. $f(x) = 9^x$ | 5. $f(x) = 6x$ |
|----------------------|------------------|--------------------------|-----------------|----------------|

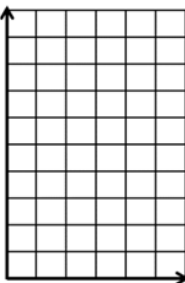
**Create a model (equation) for each scenario.**

|  |  |  |
|--|--|--|
| 6. A baseball card is worth \$150 and its value increases at a rate of 12.7% per year. | 7. There are 8 boar in Mr. Bean's woods. Their population increases by 24% every year. | 8. The population of Brustville is currently 30,000 people. If the population increases by 103.7% annually, write an explicit formula that models the population. Find the population of Brustville in 10 years. |
|--|--|--|

**Sketch the graph by filling out a T-chart. Find AT LEAST THREE points (even if they can't all fit on the graph).**

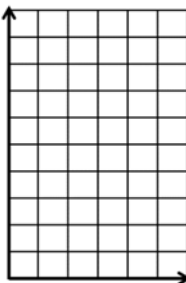
9.  $y = 4(3)^x$

|     |     |
|-----|-----|
| $x$ | $y$ |
|-----|-----|



10.  $y = 4(1.8)^x$

|     |     |
|-----|-----|
| $x$ | $y$ |
|-----|-----|



**Given the following table of values, create an equation that fits these points.**

11.

|     |   |    |     |       |
|-----|---|----|-----|-------|
| $x$ | 0 | 1  | 2   | 3     |
| $y$ | 6 | 42 | 294 | 2,058 |

12.

|     |   |      |       |         |
|-----|---|------|-------|---------|
| $x$ | 0 | 1    | 2     | 3       |
| $y$ | 2 | 11.6 | 67.28 | 390.224 |

**For each equation, identify the initial value (I.V.) and the percent increase.**

|                       |                       |                        |                       |
|-----------------------|-----------------------|------------------------|-----------------------|
| 13. $y = 8(1.335)^x$  | 14. $y = -5(3.4)^x$   | 15. $y = 5.8(2.101)^x$ | 16. $y = (1.121)^x$   |
| I.V. ____ % Inc: ____ | I.V. ____ % Inc: ____ | I.V. ____ % Inc: ____  | I.V. ____ % Inc: ____ |

**Answers to 7.1 CA #1**

|                       |                       |  |                            |                             |                 |
|-----------------------|-----------------------|--|----------------------------|-----------------------------|-----------------|
| 1. Exponential        | 2. Neither            | 3. Exponential   | 4. Exponential             | 5. Linear                   |                 |
| 6. $y = 150(1.127)^x$ | 7. $y = 8(1.24)^x$    | 8.<br>$f(x) = 30,000(2.037)^x$<br>$f(10) = 36,900,440$ | 9. Check with a calculator | 10. Check with a calculator |                 |
| 11.<br>$y = 6(7)^x$   | 12.<br>$y = 2(5.8)^x$ | 13. 8;<br>33.5%  | 14. -5;<br>240%            | 15. 5.8;<br>110.1%          | 16. 1;<br>12.1% |