1. Simplify each of the following expressions with no negative exponents and show ALL work.

a.  b.  c.  d. 

2. Write each radical using rational exponents.

a.  b.  c.  d. 

3. Solve for x in the following problems

a.  b.  c. 

4. Make a table and graph and label the key information (domain, range, y-intercept, asymptote, increasing/decreasing):

a.  b. 

5. Write an exponential equation for the following tables 6. Write a recursive formula for the explicit formula.

a. b. a.  b. 

|  |  |
| --- | --- |
| *x* | *y* |
| 0 | 1 |
| 1 | 3 |
| 2 | 9 |
| 3 | 27 |

|  |  |
| --- | --- |
| *x* | *y* |
| 0 | 5 |
| 1 | 10 |
| 2 | 20 |
| 3 | 40 |

7. Write an explicit formula for the recursive formulas.

a.  b. 

8. A biologist notices that a certain population of buffalo has approximately 40 buffalo when they find them in a national park. They population grows at a rate of 12% per year.

a. Write an equation modeling the expected population of the buffalo.  
 b. Using your equation, how many buffalo would you expect to find in 15 years?

9. Given the geometric sequence 

a. Write the recursive equation for the sequence  
 b. Write the explicit equation for the sequence

10. Compare the following equations to  by giving the domain, range, y-intercept and asymptote of both

a.  b.  c. 

|  |  |  |
| --- | --- | --- |
| **Bank Sparta**  - annual interest: 3.5% - compounded quarterly |  | **Bank Skyline**  - annual interest: 3.5% - compounded monthly |

11. You have two banks to choose from.

You have $1,500 to invest and you plan to invest the money for 5 years. Write an equation to model each   
  
bank and find out how much money each account will have after 5 years, using the formula 

12. The population of koala’s in a park is about 450 and grows at a rate of 6% per year for the first 6 years. Find the average rate of change from year 2 to 5.