

**Beverly Hills High School -- Algebra B -- Quest #4 -- Chapter 7 -- 70 points**

**ALWAYS SHOW YOUR WORK.** Partial credit for partial performance. Pencils only. Be clear, complete and neat. All problems are five points unless specified otherwise. Always state units and reduce fractions, too.

1) Express  $X^{\frac{4}{3}}$  as a radical.

2) Evaluate  $49^{\frac{5}{2}}$

3) Evaluate  $125^{-\frac{2}{3}}$

4) Circle all of the following that are exponential functions.

$$y = 3^{x-5}$$

$$f(t) = (-.97)^{4t}$$

$$g(x) = x^7 + x$$

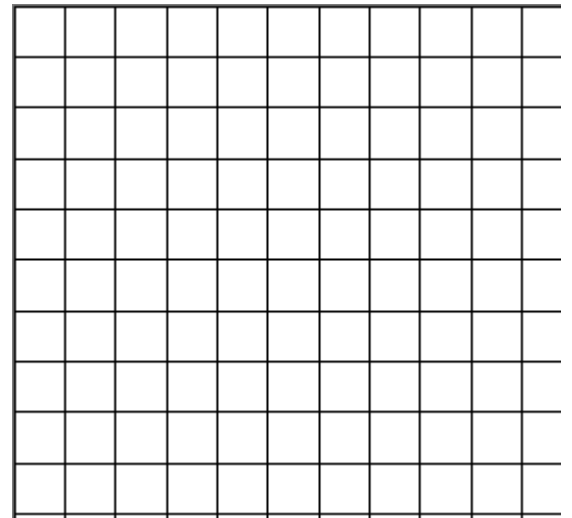
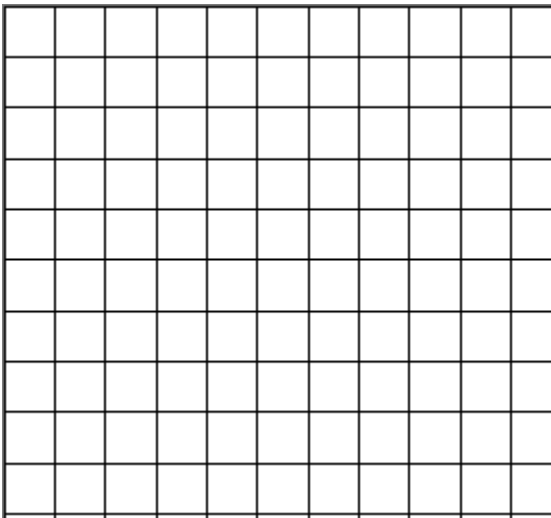
$$y = 3x - 15$$

$$f(z) = 2.37^z$$

Carefully sketch the graph of the following exponential functions. Show a table of values for credit.

5)  $y = 2^{1-x}$

6)  $y = -3^{x-1}$



7) Your grandpa bought a house back in 1955 for \$15,000. Its value has grown just 3% every years since then. What is the house worth sixty years later, in 2015? Show the equation and the answer for full credit.

8) A colony of ants had 850,000 ants in it on January 1. Each day 14% of the ants died off from a lack of water. How many ants would be left in the colony 20 days later, on January 21st? Show the equation and the answer for full credit.

9) Which letters represent geometric sequences? Write the letters here: \_\_\_\_\_

- |                                |                            |
|--------------------------------|----------------------------|
| a) 30, 60, 90, 120, ...        | e) 8, 4, 1, 1/2, 1/16, ... |
| b) -2, -10, -50, -250, ...     | f) 1, -2, 3, -4, ...       |
| c) 1, 1, 1, 1, ...             | g) 96, 24, 4, 1, ...       |
| d) 2/3, -2/6, 2/12, -2/24, ... | h) 10, -1, 0.1, -0.01, ... |

10) Give the first five terms of the geometric sequence defined by  $a_n = 12\left(\frac{1}{2}\right)^{n-1}$

Write the explicit and recursive forms for each of the following geometric sequences.

- 11) 88, 11, 11/8, 11/64, ...
- 12)  $\frac{35}{9}, -5, \frac{45}{7}, \frac{-405}{49}, \dots$

13) Find the 8th term of a geometric sequence whose first term is 12,000 and common ratio is  $-1/3$ . Must be exact for full credit.

14) Find the 12th term of a geometric sequence if the 5th term is  $1/32$  and the common ratio is 4.