Appendix A

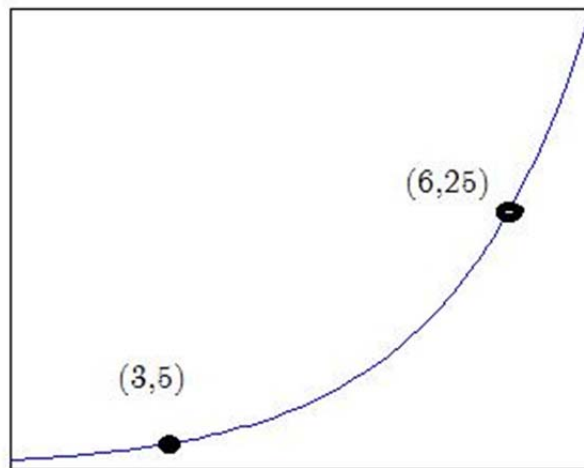**Exponential Growth Interview Questions**

1. What is the formula associated with the following table?

X	0	2	4	6
Y	2	6	18	54

2. Draw a table and a graph for the relation $y = 5 \times 2^{\frac{x}{3}}$

3. Find a formula for the following graph:

$(6,25)$

$(3,5)$

4. If an initial population of 10 triples every four years, find a table, a graph and a formula for the exponential relation.

5. If the units for x are *years*, the units for y are dollars and $y = 3000 \times 3^{\frac{x}{5}}$, what information is contained in this formula? As they need prompting:

   a. What does 3000 tell us?
   b. What does the *3* as the base tell as?
   c. What does $\frac{x}{5}$ as the exponent tell us?
   d. How often will the money triple?
   e. Can you provide a verbal description for the situation associated with the formula?
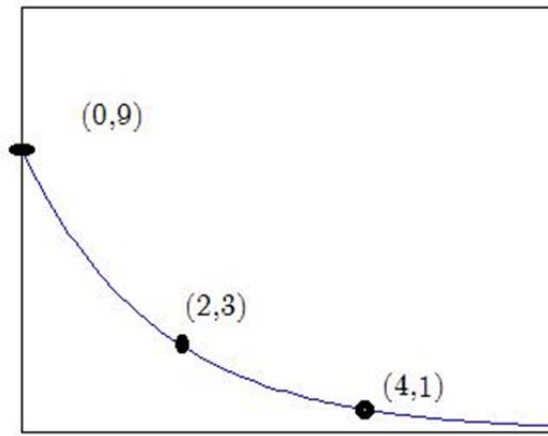
Exponential Decay questions:

6. What is the formula associated with the following table?

x	0	2	4	6
y	10	5	2.5	1.25

7. Draw a table and a graph for the relation $y = 16 \times (\frac{1}{2})^{\frac{x}{3}}$

8. Find a formula for the following graph:

(0,9)

(2,3)

(4,1)

9. If an initial mass of 10 grams reduces by a factor of 1/2 every 2012 years, find a table, a graph and a formula for the exponential relation?

10. If $x = years$, $y = number\ of\ people$ and $y = 2000 \times (\frac{1}{2})^{\frac{x}{3}}$, what information can we deduce from the formula? If they need prompting:

   a. What does 2000 tell us?

   b. What does the *1/2* as the base tell as?

   c. What does the x/3 as the exponent tell us?

   d. How often will the population halve?

   e. Can you provide a verbal description for a situation associated with the formula?

11. What role could technology play in assuring that a student understands exponential functions?

12. How would you present exponential functions to ensure that students understand the concept and are not simply memorizing a procedure?

13. What questions might you ask students in order to determine whether they really understand exponential functions and are not simply memorizing a procedure?