Pre-Calculus Test Review Name _____

Exponential, Logistic & Logarithmic Unit Date: _____Period: _____

Calculator Inactive

Use the properties of exponents to expand:

1. $\log_3 \frac{x^3 y}{3z}$

2. $\log_8 \frac{\sqrt{xy}}{3}$

Solve:

3. $3\log_2 x + 1 = 7$

4. $\log \sqrt[3]{10} = x$

5. $\ln \frac{1}{e^7}$

6. Afghanistan suffered two major earthquakes in 1998. The first had a magnitude of $R = 6.1$ and the second had a magnitude of $R = 6.9$. Use $\log \frac{a}{T} + B$ to find how many times more powerful the second quake was. Assume that the values of B and T are equal for both earthquakes.

7. Write the exponential function that satisfies the conditions: Initial population = 67000, decreasing at a rate of 1.67% per year.

8. Write the exponential function that satisfies the conditions: Initial population = 67000, increasing at a rate of 1.67% per year.

9. Rewrite as an exponential expression: $\log_3 \frac{3}{8} = x$.

10. Condense and simplify: $2 \ln xy^2 - 3 \ln y$.

 Jean Adams

Calculator Active:

Solve: If there are any extraneous solutions, tell why they are extraneous.

11. $4^{x+3} = 7^x$

12. $\log(x+2) + \log(x-1) = 4$

12. $\frac{50}{4+e^{2x}} = 11$

13. The number P of students infected with the flu at Olympia High School t days after exposure is modeled by: $P(t) = \frac{300}{1+e^{4-t}}$

a. What was the initial number of students infected with the flu?

b. When will 100 students be infected?

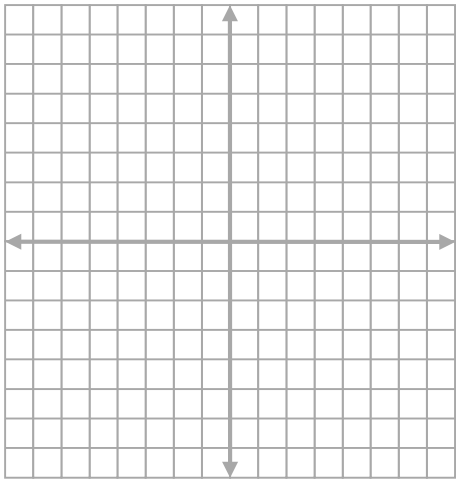
c. What would be the maximum number of students infected?

14. The pH of sea water is 7.6 and the pH of milk of magnesia is 10.5.

a. What are the hydrogen ion concentrations of each?

b. How many times greater is the hydrogen-ion concentration of sea water than of milk of magnesia?

15. Graph the function and analyze: $e^{x^2-5} - 2 = f(x)$



Domain: _____

Range: _____

Increasing on interval: _____

Decreasing on interval: _____

VA: _____

HA: _____

Holes: _____

 Jean Adams