Name: _____ Per. ____

Pre-Calculus Test Chapter 3 Form A Show ALL work!!!

1 Write the logarithmic equation in exponential form.

$\log_7 \frac{1}{49} = -2$

2 Solve the exponential equation algebraically.

$7 - 2e^x = 5$

3 Solve for the exact value of x.

$2^{x-2} = \frac{1}{32}$

4 Expand the logarithmic expression.

$\ln \frac{x^4 \sqrt{y}}{z^5}$

5 Write the exponential equation in logarithmic form.

$81^{\frac{1}{4}} = 3$

6 Describe the transformation from the graph of f to the graph of g.

$f(x) = 3^x \qquad g(x) = -3^{x-2} + 5$

7 Find the exact value of the logarithmic expression.

$\log_2 \sqrt[4]{8}$

8 Solve the logarithmic equation algebraically.

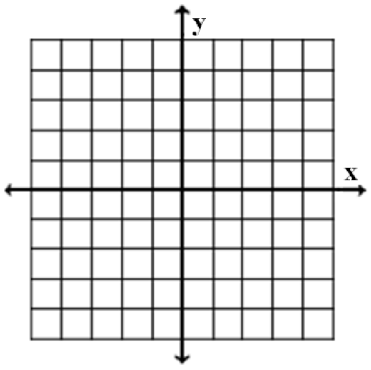
$3 \ln 5x = 10$

9 Solve the exponential equation algebraically.

$4\left(3^x\right) = 20$

10 Sketch the graph of the exponential function. State the domain, y-intercept, and horizontal asymptote.

$f(x) = 2^x$



Domain:

y-intercept:

Horizontal Asymptote.

11 **Trust Fund** On the day of a child's birth, a deposit of $25,000 is made in a trust fund that pays 8.75% interest, compounded continuously. How long will it take the balance to double?

12 Rewrite the logarithm as a ratio.

$\log_3 7$

13 Write the logarithmic equation in exponential form.

$\ln 1 = 0$

14 Expand and simplify the logarithmic expression.

$\log_5 \frac{1}{250}$

15 Describe the transformation from the graph of f to the graph of g.

$f(x) = \log_6 x$ g(x)= $-\log_6(x+2)$

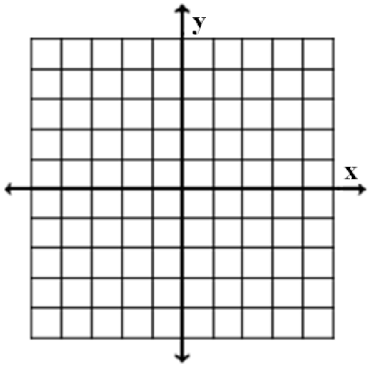
16 Condense the logarithmic expression.

log a − 2 log b + 3 log c

17 State the letter that represents the natural base along with its numerical approximation.

18 Sketch the graph of the logarithmic function. State the domain, x-intercept, and vertical asymptote.

$f(x) = \log_4 x$



Domain:

x-intercept:

Vertical Asymptote.

19 **Monthly Payment** The model

$$t = 12.542 \ln\left(\frac{x}{x - 1000}\right), \quad x > 0$$

approximates the length of a home mortgage of $150,000 at 8% in terms of the monthly payment. In the model, t is the length of the mortgage in years and x is the monthly payment in dollars. If the monthly payment is $1,100.65, then it will take 30 years to pay off the home. If it takes 30 years to pay off the home, then the total amount paid is $396,234. What is the total interest paid if the monthly payment is $1,100.65? Explain how you solved this problem and what important idea it conveys.

20 Determine the balance for $5,000 dollars invested at rate 10% for 3 yeasr and compounded quarterly.