Pre-Calculus Test Form A Name _____

Exponential, Logistic & Logarithmic Unit Date: _____ Period: _____

CALCULATOR ACTIVE. Total Points: _____

1. Use the population model: $P(t) = \frac{12545}{1+48.993e^{-0.032t}}$ where P is the population in millions and t is the number of years since 1800.

1a. _____

A.) Re-express the year 1850 in terms of the year 1800 being $t = 0$.

1b. _____

1c. _____

B.) What was the population in the year 1850?

C.) What is the maximum sustainable population for this model?

2. The population in Orlando, Florida in the year 1910 was 45,000. Assume the population increased at a rate of 2.25% per year.

2a. _____

A.) Estimate the population in 1940.

2b. _____

B.) Predict when the population will reach 1,000,000.

3. Solve: $e^{2x} = 80$ Round your answer to three decimal places.

3. _____

4. Write the exponential function that satisfies the conditions: Initial population = 28900, decreasing at a rate of 2.3% per year.

4. _____

5. Graph the function and analyze: $f(x) = \log x^2 - 3$

Domain: _____

Range: _____

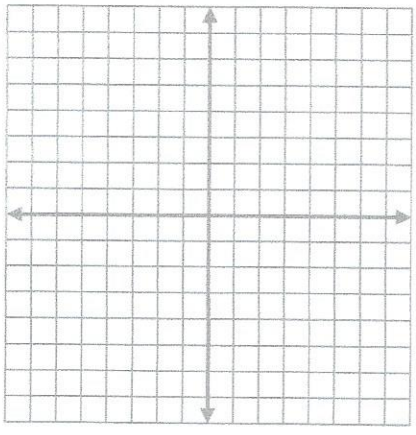
Increasing on interval: _____

Decreasing on interval: _____

VA: _____

HA: _____

Holes: _____



Jean Adams

Pre-Calculus Test Form A
Exponential, Logistic & Logarithmic Unit

Name _____
Date: _____ Period: _____

CALCULATOR INACTIVE.

6. Use the properties of exponents to expand the expression:

$$\log \sqrt[3]{\frac{8x}{y}}$$

6. _____

7. Solve: $15 - 2\log x = 21$

7. _____

8. Solve the equation: $\ln(x-3) + \ln(x+4) = 3\ln 2$
List any extraneous solutions.

8. _____

Extraneous: _____

9. Use the properties of exponents to solve $8^{\frac{x}{2}} = 4^{x+1}$

9. _____

10. Evaluate the expression: $\ln e^3$

10. _____

11. Evaluate the expression: $\log_3 27$.

11. _____

12. Evaluate the expression: $10^{\log 8}$

12. _____

13. Rewrite as an exponential expression: $\log_3 18 = x$

13. _____

14. Condense and simplify: $3\ln x^3y + 2\ln yz^2$

14. _____

Jean Adams

Pre-Calculus Test Form B Name _____

Exponential, Logistic & Logarithmic Unit Date: _____ Period: _____

CALCULATOR ACTIVE. Total Points: _____

1. Use the population model: $P(t) = \frac{13204}{1+52.997e^{-0.034t}}$ where P is the population in millions and t is the number of years since 1900.

1a. _____

A.) Re-express the year 1940 in terms of the year 1900 being $t = 0$.

1b. _____

1c. _____

B.) What was the population in the year 1940?

C.) What is the maximum sustainable population for this model?

2. The population in Orlando, Florida in the year 1910 was 45,000. Assume the population increased at a rate of 2.25% per year.

2a. _____

A.) Estimate the population in 1950.

2b. _____

B.) Predict when the population will reach 1,000,000.

3. Solve: $e^{3x} = 76$ Round your answer to three decimal places.

3. _____

4. Write the Exponential function that satisfies the conditions: Initial population = 23700, increasing at a rate of 1.8% per year.

4. _____

5. Graph the function and analyze: $f(x) = 2 - \log x^2$

Domain: _____

Range: _____

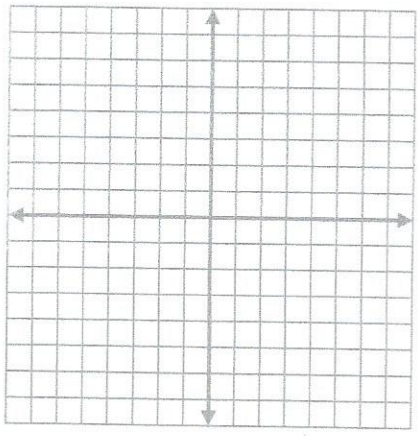
Increasing on interval: _____

Decreasing on interval: _____

VA: _____

HA: _____

Holes: _____



Jean Adams

Pre-Calculus Test Form B Name _____

Exponential, Logistic & Logarithmic Unit Date: _____ Period: _____

CALCULATOR INACTIVE.

6. Use the properties of exponents to expand the expression:

$\log \sqrt{\frac{x}{9y}}$

6. _____

7. Solve: $5 + 3\log x = 17$

7. _____

8. Solve the equation: $\ln(x+5) + \ln(x-3) = 2\ln 3$
List any extraneous solutions.

8. _____

Extraneous _____

9. Use the properties of exponents to solve $3^{\frac{x}{2}} = 9^{x-1}$

9. _____

10. Evaluate the expression: $\ln e^7$

10. _____

11. Evaluate the expression: $\log_5 125$.

11. _____

12. Evaluate the expression: $10^{\log 9}$

12. _____

13. Rewrite as an exponential expression: $\log_2 17 = x$

13. _____

14. Condense and simplify: $2\ln x^3 y + 3\ln yz^3$

14. _____

Jean Adams