ID:_____   Name:_____

- This quiz consists of 8 questions for a total of 10 points.
- You have 10 minutes to complete the quiz.
- Wishing you success.

True or False. Circle your answers (either T (true) or F (false)) on this sheet.

1. (**T** / F) e^x is an exponential equation.

2. (T / **F**) The domain of a logarithm equation is $(-\infty, \infty)$.

3. (**T** / F) Given an exponential equation $f(x) = b^x$ where $b > 1$. Then $f(x) \to \infty$ as $x \to \infty$.

4. (T / **F**) There is a horizontal asymptote for each logarithm equation $f(x) = \log_b(x)$.

5. (**T** / F) The inverse of $y = \ln(2x)$ is the exponential function $y = \dfrac{e^x}{2}$.

$f(g(x)) = \ln\left(2 \cdot \dfrac{e^x}{2}\right) = \ln(e^x) = x \ln(e)$ $\dfrac{f(g(x)) = x?}{g(f(x)) = x?}$

$g(f(x)) = \dfrac{e^{\ln(2x)}}{2} = \dfrac{2x}{2} = x$ $= x$

Show all your work and justify your answer:

6. Rewrite the equation as a logarithmic equation.

$e^{2x} = 25 \iff \underline{\quad 2x = \log_e 25 \quad \Rightarrow \quad 2x = \ln(25) \quad}$

$2^{3a+5} = 49 \iff \underline{\quad 3a+5 = \log_2 49 \quad}$

7. Rewrite the equation in its equivalent exponential form.

$3 = \log_6(x) \iff \underline{\quad 6^3 = x \quad}$

$x = \log_5(1) \iff \underline{\quad 5^x = 1 \quad}$

8. Evaluate the expression by rewriting it as an exponential expression.

$\log_8\left(\frac{1}{64}\right)$. $\dfrac{1}{64} = \dfrac{1}{8^2} = 8^{-2}$

$\log_8\left(8^{-2}\right)$

$= -2 \log_8(8)$

$= -2 \cdot 1$

$y = \log_8\left(\frac{1}{64}\right)$

$8^y = \dfrac{1}{64} = 8^{-2}$

$y = -2$

$\log_8\left(\frac{1}{64}\right) = -2$