

Quiz15, MAT 1375 Professor Chiu

ID: _____ Name: _____

- This quiz consists of 2 sets of questions for a total of 10 points.
- You have 15 minutes to complete the quiz.
- Scientific calculators are allowed.
- Wishing you success.

True or False questions:

1. T The range of a logarithm equation is $(-\infty, \infty)$.
2. F There is a ~~horizontal~~ asymptote for each logarithm equation $f(x) = \log_b(x)$.
Vertical
3. T The inverse of $y = \ln(2x)$ is the exponential function $y = \frac{e^x}{2}$.
4. T Given a logarithm equation $f(x) = \log_b(x)$ where $b > 1$. Then $f(x) \rightarrow -\infty$ as $x \rightarrow 0^+$.
5. T The logarithm equation $f(x) = \log_b(x)$ is one-to-one.

Show all your work and justify your answer:

6. Rewrite the equation as a logarithmic equation.

$$e^{2x} = 25 \Leftrightarrow \log_e(25) = 2x$$

$$2^{3a+5} = 49 \Leftrightarrow \log_2(49) = 3a+5$$

7. Rewrite the equation in its equivalent exponential form.

$$3 = \log_6(x) \Leftrightarrow 6^3 = x$$

$$x = \log_5(1) \Leftrightarrow 5^x = 1$$

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

$$x = \log_8\left(\frac{1}{64}\right) \Leftrightarrow 8^x = \frac{1}{64} \Rightarrow 8^x = 8^{-2} \Rightarrow x = -2$$
$$\frac{1}{64} = \frac{1}{8^2} = 8^{-2}$$