

Quiz 2
Math 142

Print Name _____
Section or Class time _____

1. The amount of \$1000 is invested at a continuously compounded interest rate, r . After 3 years the value of the account is \$1161.84. Find r as a decimal rounded to 4 places. How long will it take the \$1000 amount to double? quadruple?

2. Solve for x if

a) $\frac{1}{5} \log_2 (x - 2)^5 + \log_2 (x - 4) = 3$.

b) $\ln(2 + x) - \ln(2 - x) = 1$

3. a) Graph the piecewise defined function,

$$f(x) = \begin{cases} -1 & x = 2 \\ 4\left(\frac{x^2 - 5x + 6}{x^2 - 4}\right) & x < 3 \\ \ln \frac{1}{5-x} & 3 \leq x < 5 \end{cases} \quad x \neq 2$$

Find each limit or state DNE.

a) $\lim_{x \rightarrow -2^-} f(x)$ b) $\lim_{x \rightarrow -2^+} f(x)$

Does $\lim_{x \rightarrow -2} f(x)$ exist? Is f continuous at -2 ?

c) $\lim_{x \rightarrow 2} f(x)$ Is f continuous at 2 ?

$$d) \lim_{x \rightarrow 3^-} f(x)$$

$$e) \lim_{x \rightarrow 3^+} f(x)$$

Does $\lim_{x \rightarrow 3} f(x)$ exist?

Is f continuous at 3?

$$f) \lim_{x \rightarrow 5^-} f(x)$$

Is f left continuous at 5?

$$4. f(x) = \begin{cases} \ln(x^2 - 2x + 2) + 4e^{x-1} & x < 1 \\ 6x + a & 1 \leq x \end{cases}$$

What value of a makes f continuous at $x=1$?

5. $f(x) = \frac{2}{1 - e^x}$

Evaluate each limit as a number, as infinity or as minus infinity, or state DNE.

a) $\lim_{x \rightarrow \infty} f(x)$

b) $\lim_{x \rightarrow -\infty} f(x)$

c) $\lim_{x \rightarrow 0^-} f(x)$

d) $\lim_{x \rightarrow 0^+} f(x)$