MATH 118: Quiz 8

Name: Key

Directions:

* Show your thought process (commonly said as "show your work") when solving each problem for full credit.
* If you do not know how to solve a problem, try your best and/or explain in English what you would do.
* Good luck!

---

1. Evaluate the following expressions without a calculator:

(a) $\log_6 \sqrt{6}$

$= \log_6 6^{\frac{1}{2}} = \frac{1}{2}$

(b) $e^{\ln 5} = 5$

(c) $\log_{15832} 1 = 0$

(d) $\log_2 28 - \log_2 7 = \log_2 \frac{28}{7} = \log_2 4 = 2$

(e) $\log_2 4^6 = \log_2 (2^2)^6 \overset{\text{LoE}}{=} \log_2 2^{12} = 12$

Change this number to the base to use log property 3.

2. Find the solution of the following equation. Remember to check your work if necessary.

$$\log x + \log(x-1) = \log(4x)$$

$\log(x(x-1)) = \log(4x)$ Law I

$x(x-1) = 4x$ because log is 1-1

this tells me it's a quadratic.

$x^2 - x = 4x$

$x^2 - 5x = 0$

$x(x-5) = 0$

$x = 0, \quad x - 5 = 0$

~~$x = 0$~~, $\boxed{x = 5}$

not a solution since $\log(0)$ is undefined