Homework 10: Due Friday April 28th in recitation.

Late homework will not be accepted. **Write on only one side of each page. Staple all work.**

1. Solve the logarithmic equations. Check your solutions. If no solution exists, write "no solution".
   (a) $\log_a(x+2) + \log_a 3 = \log_a 5 + \log_a(2x-3)$.
   (b) $\log_a x + \log_a(x-4) = \log_a(-(x-1)^2+4)$

2. Solve the exponential equations. Check your solutions. if no solutions exits, write "no solution".
   (a) $e^x - 10e^{-x} + 3 = 0$
   (b) $\frac{50(2^x)}{1+2^{-x}} = 4$.

3. Find the value of the 6 trigonometric functions
   (a) at the given value of $t = \frac{234\pi}{6}$.
   (b) at the given value of $t = -\frac{512\pi}{4}$.

4. Suppose the terminal point determine by t lies in the second quadrant and is $(-24/25, y)$.
   (a) Find y.
   (b) Find the value of the 6 trigonometric functions at $837\pi + t$

5. Find the values of the remaining trigonometric functions if If $\tan t = -4$ and $\csc t > 0$.

6. Suppose that the terminal point, (x, y), associated to t lies in the first quadrant. Show that
   (a) $\sin(t+\pi) = -\sin t$
   (b) $\tan(t+\pi) = \tan t$

7. Bonus question (5 points):
   (a) Show that $\log_{10}(e) = \ln(\frac{1}{10})$
   (b) Use the law of Logarithms to simplify the expression for $\log(f(x))$, where

$$f(x) = \frac{1}{\sqrt{x\sqrt{x\sqrt{x}}}}$$