QUIZ 5 - MATH 131 Friday, September 30

YOUR NAME:_____ George Voutsadakis

Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [2 points]

   (a) Compute the exact value of $\sin^{-1}\left(\cos\left(\frac{4\pi}{3}\right)\right)$.

   (b) Is $\sin^{-1}\left(\sin\left(\frac{5\pi}{6}\right)\right) = \frac{5\pi}{6}$? Explain as best you can why or why not.

2. [4 points] Find the exact value of $\tan\left(\sin^{-1}\left(-\frac{5}{7}\right)\right)$ showing all details of your reasoning. (Hint: Set $\theta := \sin^{-1}\left(-\frac{5}{7}\right)$.)

3. [6 points] In the following show your work, even if you do not achieve a perfect goal.

(a) Simplify as much as possible $\sec x \csc x - \cot x$.

(b) Prove the following identity.

$$\frac{1 + \sin^2 \theta}{\cos^2 \theta} = 1 + 2 \tan^2 \theta.$$