Name:

Math 1650 Section 622

Exam number 3

Show all work. How you get your answer is just as important, if not more important, than the answer itself. If you think it, write it!

1. Find the following values (5 pts. each):

   (a) $\cos\left(\frac{3\pi}{4}\right)$

   (b) $\tan\left(\frac{8\pi}{3}\right)$

   (c) $\arcsin\left(\frac{-1}{2}\right)$

   (d) $\tan(\arcsin\left(\frac{3}{8}\right)$

   (e) $\sin\left(\frac{\pi}{12}\right)$

   (Hint: $\frac{\pi}{12} = \frac{1}{2}\left(\frac{\pi}{6}\right)$)

   (f) $\cos\left(\frac{\pi}{6} - \arcsin\left(\frac{1}{3}\right)\right)$

2. Verify the following trigonometric identity (15 pts.):

$$\sec^4 x - \tan^4 x = 2\sec^2 x - 1$$

3. (20pts.) Find the solutions (in $[0,2\pi]$) of the equation

$$3\cot x + 2\sin x = 0$$

4. Use trigonometric identities to write

$$f(x) = (\sin x + \cos x)^2$$

   as a stretched, translated trig function, and sketch a graph of it. (20 pts.)

5. Express

$$\sin(3x)$$

   in terms of $\sin x$ and $\cos x$. (15 pts.)