MAT 122 Homework 4 Name_____
Due Wednesday, February 29th 2.1 – 2.4

Do your work on separate paper, organize it, and then show your work, here, but *organized* !!!

1. **2.1** Suppose $\csc(x) = \frac{25}{7}$ and $\tan(x) = \frac{7}{24}$. Find the values of the other four trigonometric functions.

2. **2.1** Multiply and simplify $(3\sin x - 3)(3\sin x + 3)$

3. **2.1** Let $x = 3\sec\theta$ and write $\sqrt{x^2 - 9}$ as a trigonometric function of θ. Assume $0 \le \theta < 2\pi$.

4. **2.1** Assume $-\frac{\pi}{2} \le \theta < \frac{\pi}{2}$ and make the substitution $x = 10\cos\theta$ in the equation $5\sqrt{3} = \sqrt{100 - x^2}$. Solve for $\sin\theta$ and $\cos\theta$.

5. **2.2** Verify the identity $\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} = \frac{1-\cos\theta}{|\cos\theta|}$

6. **2.2** Use a drawing to verify the identity $\tan\left(\cos^{-1}\left(\frac{x+1}{2}\right)\right)=\frac{\sqrt{4-(x+1)^2}}{x+1}$

7. **2.3** Solve the equations:
   a. $\tan\theta+\sqrt{3}=0$
   b. $\cos(2x)(2\cos(x)+1)=0$

8. **2.3** Find all solutions of $2\cos^2 x-7\cos x+3=0$ in the interval $[0,2\pi)$.

9. **2.4** Find the exact values of sine, cosine, and tangent of $\theta=\frac{5\pi}{12}$.