MAT 1420 Week 4 Written Assignment
40 pts Covers Sections 1.7, 1.8

Be sure to follow College Algebra formatting guidelines in your work. Just use "1420" in the top left corner, instead of "1340." I think I got them mixed up in previous assignments.

Be sure to show all work and circle final answers.

1. Sketch the graphs

   a. (5 pts) $y = \cos(x)$, with the standard restriction to make it 1-to-1 and its inverse $y = \arccos(x)$, and the line $y = x$ on the same graph.

   b. (5 pts) $y = \sin(x)$, with the standard restriction to make it 1-to-1 and its inverse $y = \arcsin(x)$, and the line $y = x$ on the same graph.

   c. (5 pts) $y = \tan(x)$, with the standard restriction to make it 1-to-1 and its inverse $y = \arctan(x)$, and the line $y = x$ on the same graph.

2. Find the exact value of each of the following, if possible. In each case, draw the picture for the angle involved. Draw the picture.

   a. (5 pts) $\arcsin\left(\sin\left(\frac{7\pi}{6}\right)\right)$

   b. (5 pts) $\sec\left(\arcsin\left(\frac{1}{2}\right)\right)$

3. Draw the picture in the 1st quadrant and write an algebraic expression that is equivalent to the given expression:

   a. (5 pts) $\cos\left(\arctan\left(\frac{x}{4}\right)\right)$

   b. (5 pts) $\tan\left(\arccos\left(\frac{x}{4}\right)\right)$

4. (5 pts) Fire tower A is 35 miles due west of fire tower B. A fire is spotted from the towers, and the bearings from A and B are $\theta = 75^0$ and $\phi = 55^0$, respectively. Find the distance d of the fire from the line segment AB.