Answer the questions in the spaces provided. **Show all of your work and circle the answer you would like to have graded for each question.**

Name: _____

1. You and a friend are both at Matherly Hall leaving class. You both travel to Little Hall, but decide to take different routes. Your friend walks 1500 feet south, and then walks 500 feet east. You decide to walk in a straight line from Matherly to Little. On what bearing should you walk? Give your answer in the form S_____°E.

2. Evaluate the following expression exactly **without a calculator**:

$$\frac{\arctan\left(\sqrt{3}\right) - \arcsin\left(\frac{\sqrt{3}}{2}\right) + \operatorname{arcsec}(-1)}{\arccos\left(\frac{1}{2}\right) - \arcsin\left(\frac{1}{2}\right)}$$

3. Show how to compute each of the following by hand.

   a.) $\cos\left(\arctan\left(\frac{3}{4}\right)\right)$;

   b.) $\arccos(\sin(\arctan(\cos(\pi))))$;

   c.) $\arcsin(\sin(\frac{3\pi}{4}))$.

4. Find the exact values of θ and x in the figure below: (Figure **not** to scale.)