1. (4pt) Find $\ell$ and $\theta$ in the figures below. Round to two decimal places. (Assume that the figures are not drawn to scale.)

![Diagram 1: Triangle with sides 17 and 36°]

![Diagram 2: Triangle with sides 8 and 10]

2. (3pt) A telephone pole is 40 ft tall. There is a cable which runs from the very top of the pole to the ground. For safety purposes it is required that the cable makes an angle of $75^\circ$ with the ground. When such a telephone pole is installed, how far apart (on the ground) are the base of the pole and the base of the cable? Round to two decimal places.

3. (3pt) In a particular city, Market street, Exchange street, and State street meet at three different intersections forming a triangle. Exchange street and State street intersect at a right angle. If you leave the intersection of Exchange street and Market street then getting to State street is a 380 m trip along Exchange street and a 500 m trip along Market street. Find the acute angle at which State street and Market street intersect.
4. (10pt) Use the space below to answer the following questions. Make sure that you indicate and distinguish your answers clearly. All numerical answers should be left in exact form.

(a) Find \( \theta \). (Do not assume that \( \phi = 90^\circ \) in this computation; that’s what you’ll be showing in part (c) and you will need to know \( \theta \) before you can justify it.)

(b) Find \( y \).

(c) There is no right angle indicated in the largest triangle. However, it turns out to be a right triangle anyway. Explain why \( \phi \) is a right angle.

(d) Find \( x \).