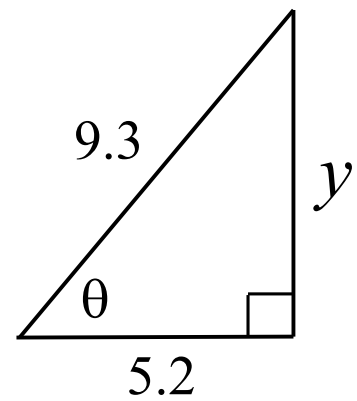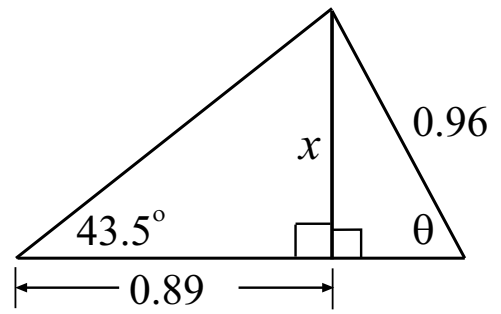**Phys 2010 (NSCC), Fall 2007**
Problem Set #1

1. Convert $19.6\,\frac{\text{m}}{\text{s}}$ to units of $\frac{\text{mi}}{\text{hr}}$.
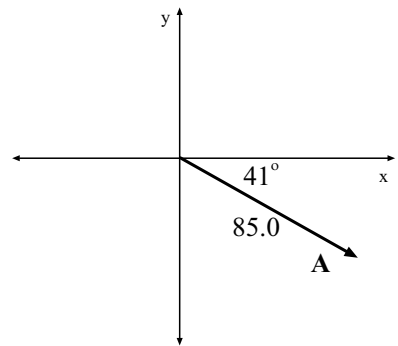
2. For the triangle shown here, find the missing side y and the angle θ.

3. For the two adjoined right triangles shown here, find the missing length x and the angle θ.

43.5°

x

0.96

θ

0.89

4. Vector **A** has magnitude 85.0 and points in the direction shown. Find A_x and A_y.
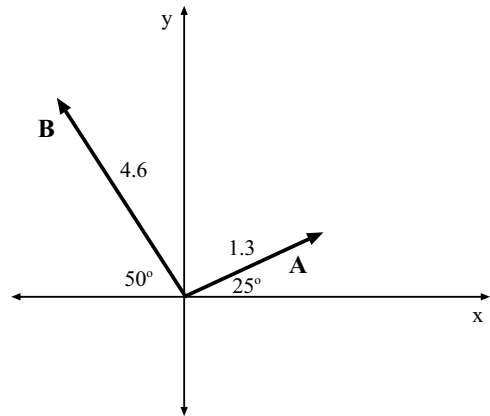
y

41°

x

85.0

A

5. The the components of the vector **A** are

$$A_x = -2.30 \qquad \text{and} \qquad A_y = +5.60 \ .$$

Find the magnitude and direction of **A**.

6. The vectors **A** and **B** have the magnitudes and directions shown at the right. Find the x and y components of the two vectors.

7. In problem 6, find the magnitude and direction of $\mathbf{A} + \mathbf{B}$.

8. A car moves in a straight line; it starts from rest and after 12.0 s it has traveled 66.0 m and its velocity is $+35.0\,\frac{\text{m}}{\text{s}}$. Find: (a) The average velocity of the car and (b) the average acceleration of the car for the given period.