Phys 2010 (NSCC), Fall 2006
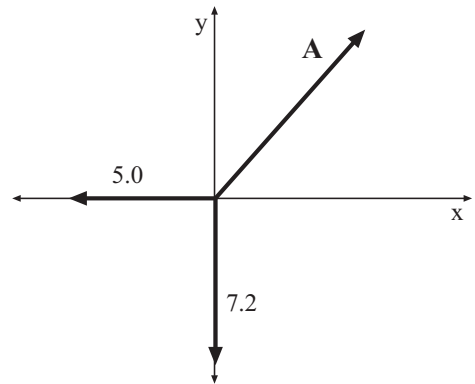**Problem Set #2**

1. The sum of the vectors shown at the right is *zero*.
Find the magnitude and direction of **A**.

2. A particle moves from $x = -2.50$ m to $x = +7.80$ m in 3.4 s. What is its average velocity
during that period?

3. A particle starts at position $x_0 = 3.0$ m (at $t = 0$) and moves with constant velocity $v = -2.6\,\frac{m}{s}$. What is its position at $t = 4.0$ s?

4. A motorist drives north for 35.0 minutes at 85.0 km/hr and then stops for 15.0 minutes. He then continues north, traveling 130 km in 2.00 hr. (a) What is his total displacement? (b) What is his average velocity?

5. If the average speed of an orbiting space shuttle is 19800 $\frac{mi}{hr}$, determine the time required for it to circle the Earth. Assume that the radius of the shuttle's orbit is 4163 mi. (This is the radius for an orbit at 200 mi above the Earth's surface.) (Recall: $C = 2\pi R$.)

6. If a particle starts at position $x = 1.0$ m and moves with velocity $v = +0.50 \frac{m}{s}$, sketch the graph of its motion in the space at the right.
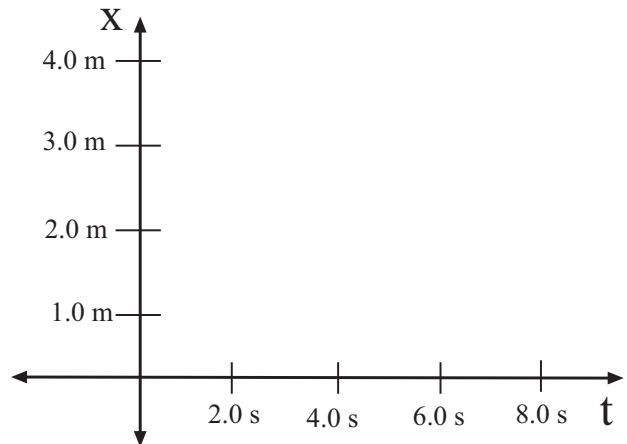
7. A particle has velocity $v_1 = +2.0 \frac{m}{s}$; 3.0 seconds later it has velocity $v_2 = -4.0 \frac{m}{s}$. What was its average acceleration during this period?

8. A particle starts with velocity $v_0 = +20.0 \frac{m}{s}$ (at $t = 0$) and moves with constant acceleration $a = -8.5 \frac{m}{s^2}$. What is its velocity at $t = 3.5$ s?