Mathematics 11
Fall 2012
Written Homework Assignment 1

Introduction:
Vectors, and operations on vectors, are used in a number of ways to represent motion in space.

For example, if a moving particle starts at the point with position vector $\vec{p}$, and its displacement vector is $\vec{d}$, then it ends up at the point with position vector $\vec{p} + \vec{d}$.

For another example, the velocity of a moving particle is represented by a vector $\vec{v}$. The length $|\vec{v}|$ represents the speed at which the particle moves, and $\vec{v}$ points in the direction of motion.

Here are some warm-up problems you might try before beginning this assignment.

1. Find a vector having the same direction as the vector $(6, 8, 24)$, and length 15 units.

2. If the initial location of a moving particle has position vector $(1, 0, -2)$, and the particle moves for 3 seconds, at a speed of 5 units per second, in the direction given by the vector $(6, 8, 24)$, what is the position vector of the particle's final location?

Assignment: A particle moves with constant velocity $\vec{v}$ (in units per second). If initially, at time 0 seconds, the particle's location has position vector $\vec{p}$, what is the position vector of the particle's location at time t seconds?

Be sure to explain your answer.