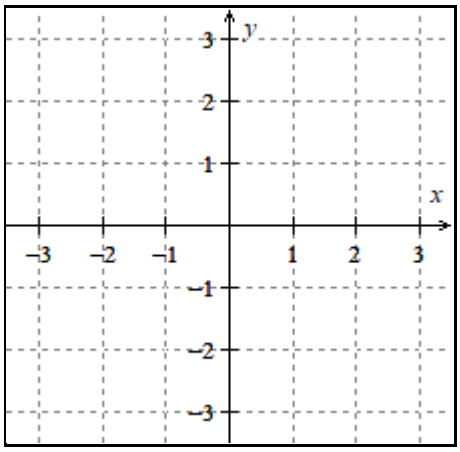
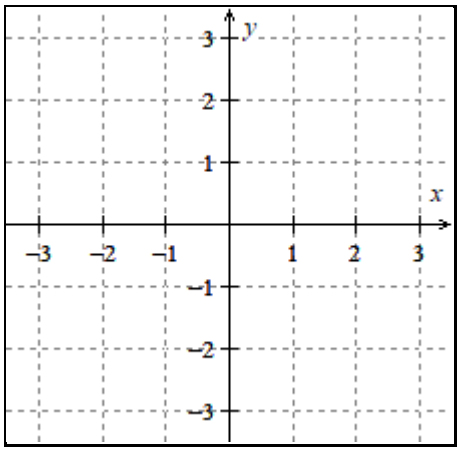
Class Discussion: Intro to Vectors

EXAMPLE: Represent the vector $\vec{v} = \langle -3, 2 \rangle$ using unit vectors and use this representation to review the definition of scalar multiplication and vector addition.



EXAMPLE: Find the magnitude and direction (in degrees with respect to the positive x-axis) of the vector $\vec{v} = \langle -3, 2 \rangle$.



For this example, note that the velocity of an object can be represented by a vector: the magnitude of the vector represents the speed of the object, and the direction of the vector represents the direction of the object.

EXAMPLE: When her drone was 400 feet above the ground, traveling at a constant speed of 50 feet per second and headed down towards the ground at an angle of 20°, the remote control for PJ's drone malfunctioned, leaving PJ unable to change the speed or trajectory of the drone.

What is the rate of change of the elevation of the drone with respect to time (i.e., what is the vertical component of the drone's velocity vector)? How long will it take for the drone to hit the ground? (Assume earth is flat.)