

Quiz #3: Vectors and Motion in Two Dimensions

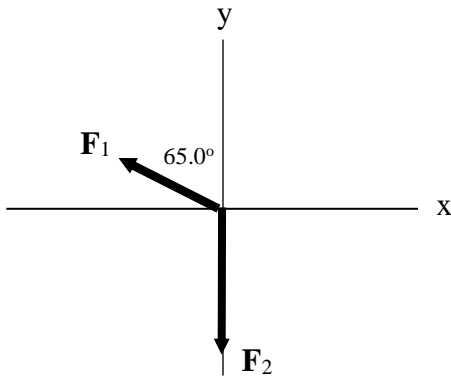
Problem 1 (2 points)

A baseball is hit at an angle θ and travels along a parabolic arc before it strikes the ground. Which one of the following statements is true?

- a) The acceleration of the ball decreases as the ball moves upward.
- b) The velocity of the ball is 0 when the ball is at the highest point in the arc.
- c) The acceleration of the ball is 0 when the ball is at the highest point in the arc.
- d) The velocity of the ball is a maximum when the ball is at the highest point in the arc.
- e) The x-component of the velocity of the ball is the same throughout the ball's flight.

Problem 2 (4 points)

Find the magnitude and direction of the sum of the two forces. The magnitude of $F_1 = 75.0$ N and the magnitude of $F_2 = 135$ N.



Problem 3 (4 points)

A projectile is launched at 50.0 m/s at a 30.0° angle. Air resistance is negligible.

a) What is the maximum height reached by the projectile?

b) What is the speed of the projectile at $t = 3.50$ s?