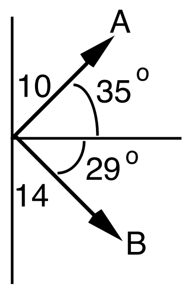
Physics 211 Section 2 Name:
Test 1
September 4, 2003

1. Vector **A** has a magnitude of 91 meters in a direction 25^o South of West. Vector **B** has a magnitude of 75 meters in a direction 46^o to the South of West. Find the direction and magnitude of **A - B. (Notice this is a subtraction)**

1. Vector A has a length of 10 meters and points in a direction 35˚ above the + x axis. Vector B has a length if 14 meters and points in a direction 20˚ below the + x axis.



Find the direction and magnitude of the vector sum of the two.
Magnitude? ______________________.
direction? ____________________________.

2. . A stone is thrown from the top of a 21. meter cliff at a speed of 18 m/s in a direction 34^o above the horizontal.

a) How long will it take the stone to reach the ground?

b) What will be the distance from the base

3. If a car traveling at 91 km/h slams on its brakes and comes to a stop in 72 meters, what is the acceleration of the car, presuming it is uniform. (1 km/h = .278 m/s).

2. A football is kicked at an angle of 58 degrees to the horizontal at a velocity of 33 meters per second.

a.) How much time will elapse before the ball comes back down to a height of 4 meters?

b.) How far will the ball have traveled horizontally when it reaches this height.

3. A car travelling 20. m/s slams on the break and leaves a skid mark 33 meters long. If the car decelerated at a uniform rate (i.e. constant acceleration) what was the acceleration?

___________ meters at _____ degrees _____ of _____.

2. A ball is tossed upward at 3.7 meters/second vertically from the edge of a cliff which is 47 meters high. How long will the ball take to reach the bottom of the cliff?

3. A car travelling 26.7 m/s slams on the break and leaves a skid mark 30 meters long. If the car decelerated at a uniform rate (i.e. constant acceleration) what was the acceleration?

Uniform acceleration:

$$v = v_0 + at$$

$$x = x_0 + v_0 t + \frac{1}{2} a t^2$$

$$v_{xf}{}^2 = v_{xi}^2 + 2a_x \left(x_f - x_i \right)$$

$$\bar{v}_x = \frac{v_{xf} + v_{xi}}{2}$$

g=9.8 m/s^2

$$v_{yf} = v_{yi} - gt$$

$$y_f = y_i + v_{yi} t - \frac{1}{2} g t^2$$

$$v_{yf}^2 = v_{yi}^2 - 2g\left(y_f - y_i \right)$$

$$C_X = A_X + B_X$$

$$C_Y = A_Y + B_Y$$

$$C_Z = A_Z + B_Z$$

$$\left| \vec{C} \right| = \sqrt{A_X^2 + A_Y^2 + A_Z^2}$$