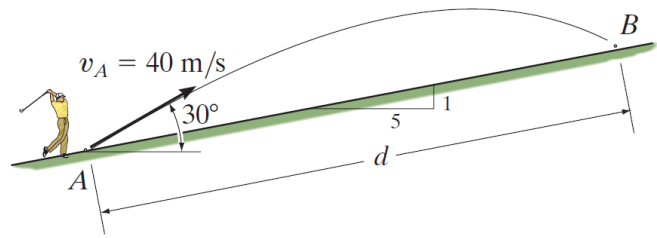


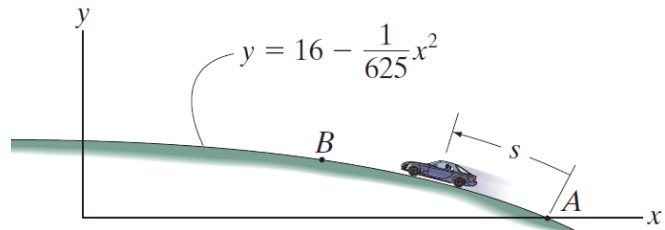
Submit your complete solution via MyCourses by Monday Nov 23, 23.59.

Exercise 1

The golf ball is hit at A with a speed $v_A = 40$ m/s and directed at an angle of 30° with the horizontal as shown. Determine the distance d where the ball strikes the slope at B.

**Exercise 2**

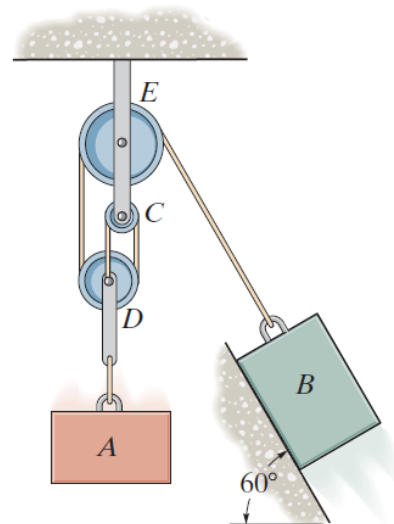
If the car passes point A with a speed of 20 m/s and begins to increase its speed at a constant rate of $a_t = 0.5$ m/s², determine the magnitude of the car's acceleration when $s = 101.68$ m and $x = 0$.



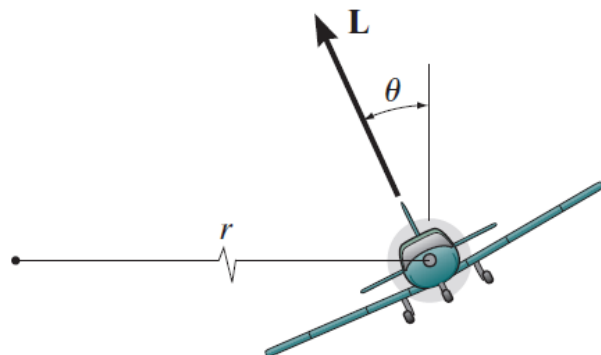
Answer: $a = 1.68$ m/s²

Exercise 3

Determine the required mass of block A so that when it is released from rest it moves the 5-kg block B 0.75 m up along the smooth inclined plane in $t = 2$ s. Neglect the mass of the pulleys and cords.

**Exercise 4**

A 5-Mg airplane is flying at a constant speed of 350 km/h along a horizontal circular path of radius $r = 3000$ m. Determine the uplift force L acting on the airplane and the banking angle θ . Neglect the size of the airplane.



Answer: $L = 51.5$ kN, $\theta = 17.8^\circ$

Exercise 5

The 10-kg sphere C is released from rest when $\theta = 0^\circ$ and the tension in the springs is 100 N. Determine the speed of the sphere at the instant $\theta = 90^\circ$. Neglect the mass of rod AB and the size of the sphere.

