You manage a business that sells bananas. If you charge $P per pound, you’ll sell $Q$ pounds, where $Q(P) = 500 - 100P$.

(a) Sketch a graph of the function $Q(P)$ for the relevant domain. Include axes, and indicate the intercepts on your graph.

(b) Write down an equation for the revenue $R$ in terms of the price $P$. Then sketch a graph of the function $R(P)$. 

(c) Find the price that leads to the maximum revenue.

(d) What is the maximum revenue?
The height of a ball thrown vertically upward is \( h(t) = 80t - 16t^2 \) feet, where \( t \) is seconds after the ball is thrown.

(a) Sketch a graph of \( h(t) \) for the relevant domain. Include axes and intercepts on your graph.

(b) How long will it take the ball to reach its maximum height? And what will the maximum height be?
The path of a soccer ball kicked at a 45-degree angle is \( y = -\frac{g}{v^2} x^2 + x \). Here, \( x \) represents the horizontal position of the ball, and \( y \) represents the vertical position of the ball. The origin corresponds to the initial position of the ball. The coefficient \( g \) is the acceleration due to gravity: \( g = 32 \, \text{ft/sec}^2 \). The coefficient \( v \) is the initial speed of the soccer ball (as soon as it is kicked).

(a) If Pele kicks the ball at \( 80 \, \text{ft/sec} \), write down the equation for the path of the ball. Then sketch the path of the ball on a set of coordinate axes. (Don’t worry about finding intercepts.)

(b) Find the maximum height reached by the soccer ball.