

M\$5 Homework 33

1. The height of an object, $h(t)$, is determined by the formula $h(t) = -16t^2 + 256t$, where t is time, in seconds. Will the object reach a maximum or a minimum? Determine what the maximum or minimum height will be.
2. The height, h , in feet, a ball will reach when thrown in the air is a function of time, t , in seconds, given by the equation $h(t) = -16t^2 + 30t + 6$. Find, to the *nearest tenth*, the maximum height, in feet, the ball will reach.
3. What is the axis of symmetry of the parabola represented by the equation $y = 2x^2 + 16x - 11$?
4. Montana and her brother Edward were racing remote control cars. The speed of Montana's car is represented by the equation $s(t) = 25t^2 - 32$, where t represents the time in seconds. The speed of Edward's car is represented by the equation $s(t) = 7t^2 + 15t$. How many seconds, to the *nearest tenth* of a second, does it take for the speed of two cars to be equal? [Only an algebraic solution will be accepted.]
5. An archer shoots an arrow into the air such that its height at any time, t , is given by the function $h(t) = -16t^2 + kt + 3$. If the maximum height of the arrow occurs at time $t = 4$, what is the value of k ?

The path of a rocket fired during a fireworks display is given by the equation $s(t) = 64t - 16t^2$, where t is the time, in seconds, and s is the height, in feet.

What is the maximum height, in feet, the rocket will reach?

In how many seconds will the rocket hit the ground? [The use of the grid below is optional.]

