Station #7: Quadratic Word Problems

1. A ball is thrown in the air. The path of the ball is represented by the equation
   h(t) = -16t2 + 55t + 20.
   a) What is the maximum height of the ball?
   b) How high is the ball after 2 seconds?
   c) When does the ball hit the ground?

$y_1 = -16t^2 + 55t + 20$

$y_2 = 0$ ← for the ground

a) Max height = 67.3 feet

b) 66 feet

c) 3.8 seconds

2. A rocket is launched off a 200 foot platform with and upward velocity of 400 feet per second. At what times will the rocket reach a height of 800 feet?

$y_1 = -16t^2 + 400t + 200$
   ↑   ↑   ↑
  feet   velocity   initial
                               height

$y_2 = 800$

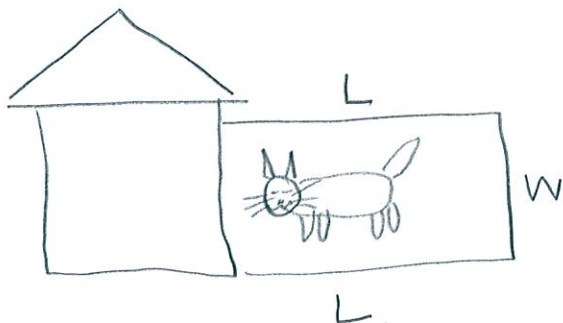2nd → trace → 5

1.6 sec
and
23.4 sec

3. Ms. Russell wants to build an enclosed outdoor play area so her kitties can safely go outside. If she has 32 yards of fencing and plans on using the side of the house as one side of her enclosure, what is the maximum area Ms. Russell can create so her kitties have the most space to play?

P = 2L + W

A = LW

2L + W = 32

W = 32 - 2L

A = L(32 - 2L)

L = 8 yards

W = 16 yards

Area = 128 yds^2