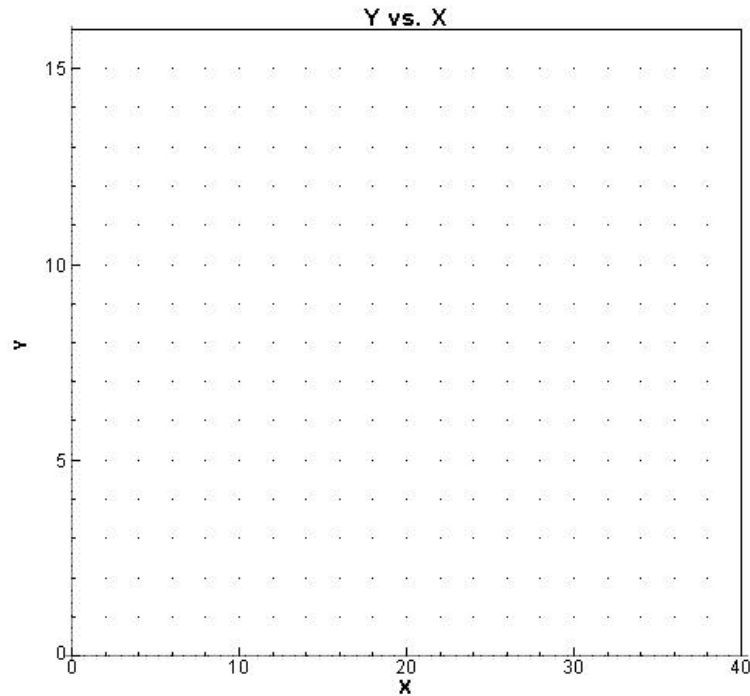


Now that we know how to solve a system of 3 equations, we can fit a quadratic through any three points. Take the following two situations:

1) Scott Haack is standing on the opponents' 40 yd line. He throws a pass toward their goal line. The ball is 2 meters above the ground when he lets it go. It follows a parabolic path, reaching its highest point, 14 meters above the ground, as it crosses the 20 yd line. Let x be the number of yds from the goal line, and y be the number of meters the ball is above the ground.

a) Make a small sketch of the situation



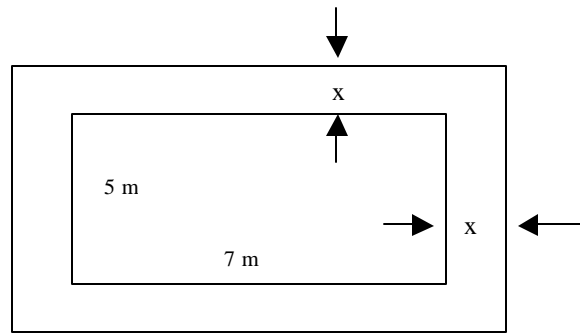
b) Find the quadratic equation that models the situation:

(Hint: first set up your three points, create your equations, and solve for a , b , and c .)

c) How high is the ball when it crosses the 10 yd line? _____

d) If nobody catches the ball, approximately where will it hit the ground? _____

2) A rectangular pond 5m by 7m is to be surrounded by a walk-way of width x meters.



a) Write the length and width of the region as functions of x :

Length: _____

Width: _____

b) Write the area of the region as a function of x and multiply it out:

$A =$ _____

c) Predict the area of the region if $x = 1, 2,$ and 3 :

X

Area

d) Find the value of x which makes the region have an area of 150 square meters using the quadratic formula:

e) Sketch the graph in a reasonable domain:

f) Find the value of x which makes the walkway have an area equal to the area of the pond.

