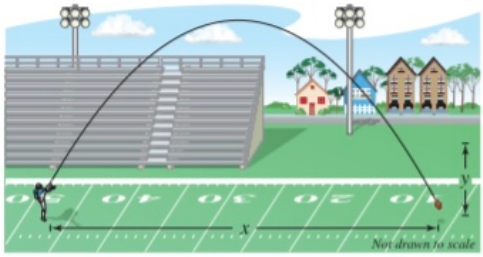
precalc *Show all work* October 26,2021
pset 6.2 *Do all work in your notebook*

For (1) and (2), use the *how to solve it method*:

1. The path of a football is given by

$$y = -0.08x^2 + 1.8x + 3$$

How high will the football get? **Hint:** draw a graph!



2. The population of Germany from 2000 through 2021 can be given by

$$P(t) = -14.83t^2 + 95.9t + 82{,}276$$

Where *t* is the year, with $t = 0$ corresponding to 2000.

A. What will the population of Germany B
B. When is the population of Germany predicted to peak?

The <u>fundamental theorem of algebra</u> says that any polynomial with a degree *n* will have at most *n* real roots (numbers that make the function equal zero). *F*ind the real roots of the polynomials below:

3. $f(x) = x^3 - x^2 - 2x$

4. $g(x) = 3x^3 + 3x^2 - 18x$.

Reflection: Why do you think it's useful to be able to find the factors of a polynomial? Answer in at least a complete sentence.