MA 137 Worksheet #18

Section 4.11
10/15/20

- Write out the linear approximation formula for a function $f(x)$. How does this formula relate to the formula for the equation of a line? What does this have to do with linear approximation?

- Write the linear approximation $L(x)$ to the function $f(x) = \sqrt{x^2 + 3}$ at $x = 1$ is.

- Approximate $\sqrt{5 \cdot 3.14^2 - 9}$ using linear approximation.
  (**Hint:** consider the linearization of $f(x) = \sqrt{5x^2 - 9}$ at $x = 3$.)

- Suppose that the specific growth rate of a plant is 1%, that is, if $B(t)$ denotes the biomass at time t then
$$\frac{1}{B(t)}\frac{dB}{dt} = 0.01$$
  Suppose that the biomass at time $t = 1$ is equal to 10 grams.
  Use a linear approximation to approximate the biomass at time $t = 1.1$.