

## Math 1552, Integral Calculus

### Sections 7.2: Separable Differential Equations

1. Solve the initial value problem:

$$y' = x \sqrt{\frac{1-y^2}{1-x^2}}, \quad y(0) = 0.$$

2. Twenty percent of the candy in your Halloween bucket disappears after one hour. If the candy is disappearing exponentially, determine:

- (a) the percent of candy after three hours, and
- (b) the amount of time it will take until you have less than one percent of your candy left.

3. As you go trick-or-treating, you walk with a velocity of  $v(t) = \frac{e^t}{1+e^t}$  feet per minute. How far have you traveled after  $\ln 5$  minutes?

4. Review: evaluate each integral.

$$\int \frac{\log_3 x^4}{x} dx$$

$$\int (1 + \ln x) \cot(x \ln x) dx$$