Section 7-6 Logistic Functions

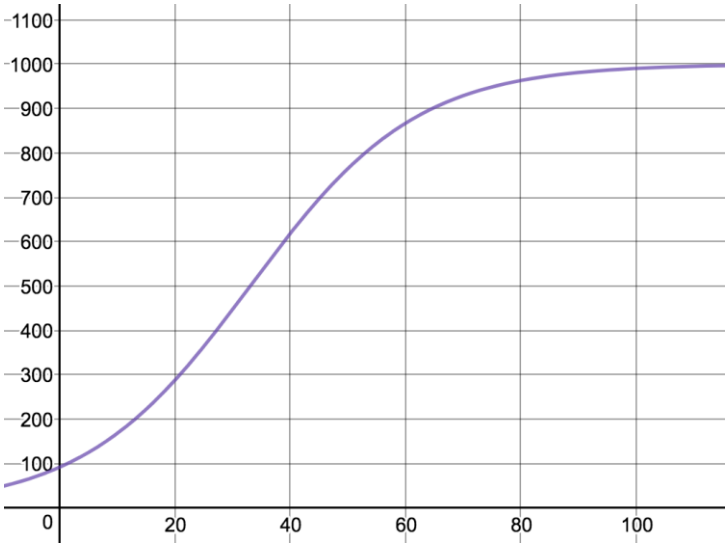
Logistic Functions are used when growth levels off (approaches an asymptote).

$$y = \frac{c}{1 + ab^{-x}}$$

where a, b, and c are constants and the domain is all real numbers.

Example:
Suppose that the population of a new subdivision is growing rapidly. Look at the table of monthly population in # of houses in the sub division. Suppose that there are only 1000 lots in the subdivision.

x (months)	*y* (houses)
2	103
4	117
6	132
8	148
10	167



a. Use (2, 103) and (10, 167) to find the particular equation of the logistic function.

b. Use the logistic function to predict the number of houses that will be occupied in two years. What process do you use, extrapolation or interpolation?

The **point of inflection** is halfway between the x-axis and the asymptote. Remember the asymptote is *c*.

c. Find the value of x at the point of inflection. What is the real-world meaning of this point?