# Chapter 13 – 3 Differential Equations; Growth and Decay

**Example 4.** A company is trying to expose a new product to as many people as possible through television advertising. Suppose that the rate of exposure to new people is proportional to the number of potential viewers who have not yet seen the television advertisement. Also, suppose that after 10 days, 40% of the potential viewers have seen the ad.

A) Find the function N(t) that gives the number of potential viewers that will have seen the advertisement after t days.

Let M represent the number of potential viewers.

B) What percentage of potential viewers will have seen the ad after 5 days?

of the potential viewers have seen the ad.

C) How long will it take before 80% of the potential viewers have seen the product advertised on television?

D) Sketch a graph showing the percentage of viewers who have seen the ad after t days.

**Example 5.** A large electronics company has determined that the monthly demand for a product is inversely proportional to the number of units sold. The company estimates that 2,000,000 units will be sold in the first year. If the company plans to introduce an updated model when demand falls to 50,000 units per month, about how much time does the company have to design and bring to market the updated model?

