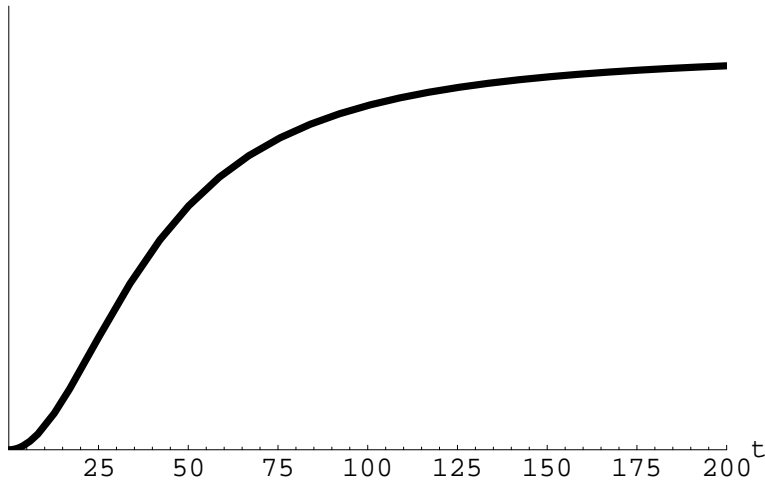Worksheet-Week 5
Spread of an Infection
Math 124

For this worksheet, a population of bacteria cells is exposed to a virus. The percentage of the total population infected t hours after introducing the virus is given by the function $f(t) = \frac{90t^2}{1600+t^2}$ and its graph is pictured below.

1. When will 10%, 45% and 88% of the cells be infected?

2. Is each bacterial cell eventually infected? If not, what portion of the population of cells is never infected?

3. For each fixed positive a, find the instantaneous rate of change of $f(t)$ at $t = a$. Make sure to specify the units on the rate of change.

4. Roughly sketch the graph of the rate of change function below. Explicitly plot the points corresponding to the times you found in (1). Is there a maximum rate of infection?

what are the units
on the vertical axis?