

## Preview of Calculus 1: AVERAGE RATE OF CHANGE

The average rate of change of  $f(x)$  over the interval  $[a, b]$  can be written as any of the following:

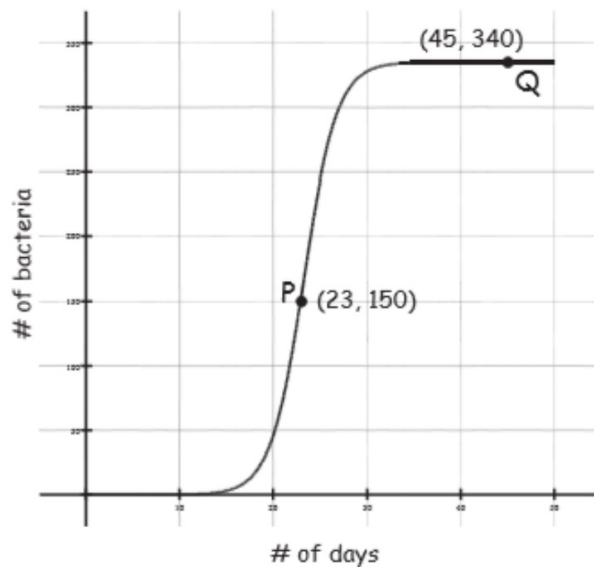
1.  $\frac{\Delta y}{\Delta x} = \frac{dy}{dx}$

2.  $\frac{f(b) - f(a)}{b - a}$

3. slope of the secant line through the points  $(a, f(a))$  and  $(b, f(b))$

\*Average rate of change is your good ol' slope formula from Algebra I.

1. In an experiment of population of bacteria, find the average rate of change from P to Q and draw in the secant line.



2. An equation to model the free fall of a ball dropped from 30 feet high is  $f(x) = 30 - 16x^2$ . What is the average rate of change for the first 3 minutes? State units.

3. Use the table below to

a) estimate  $f'(1870)$

b) interpret the meaning of the value you found in part (a)

$t$ (yr)	1850	1860	1870	1880
$f(t)$ (millions)	23.1	31.4	38.6	50.2