Average Rate of Change

p. 87 - 91 (2.4) # 8

The average rate of change of a function over an interval is:

1. $\dfrac{\text{amount of change}}{\text{length of interval}} = \dfrac{\Delta y}{\Delta x} = \dfrac{dy}{dx}$

2. Slope of the secant line through 2 points.

3. $\dfrac{f(b) - f(a)}{b - a}$ for [a, b]

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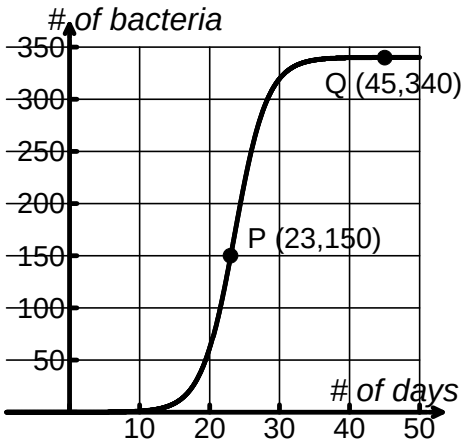
1. In an experiment of population of bacteria, find the average rate of change from *P* to *Q* and draw in the secant line.



**(FR, calc.) 2. Traffic flow $F(t)$ is defined as the rate at which cars pass through an intersection, measured in cars per minute and t is in minutes. The traffic flow at an intersection is modeled by the function F defined by $F\left(t\right) = 82 + 4\sin\left(\dfrac{t}{2}\right)$ for $0 \le t \le 30$. What is the average rate of change of the traffic flow over the time interval $10 \le t \le 15$? Indicate units of measure.

3. Use the table below, where $f(t)$ is a population and t is a time, to
   a) estimate $f'(1870)$ b) interpret the meaning of your answer.

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