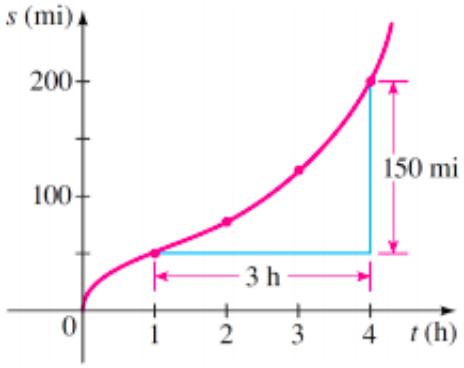
MATH 156: Precalculus
Fall 2015
Worksheet §2.4: Average Rate of Change

Introduction

Suppose you take a car trip and record the distance that you travel every few minutes. The distance s you have traveled is a function of the time t:

$$s(t) = \text{ total distance traveled at time } t$$

We graph the function s as shown in the Figure below.



1. Interpret the observation that the graph contains the point $(1, 50)$.

2. Find the average speed between first hour and fourth hour.

3. Find the average speed between second hour and the third hour — BUT BEFORE YOU DO — ask yourself what you expect as an answer.

4. Write an expression for the average speed between time t_1 and time t_2.

FROM YOUR BOOK: The average rate of change of the function $y = f(x)$ between $x = a$ and $x = b$ is:

$$\text{average rate of change} = \boxed{\phantom{\dfrac{a}{b}}}$$

EXAMPLES: For the function $f(x) = (x-3)^2$

1. Find the average rate of change between $x = 4$ and $x = 7$.

2. Find the average rate of change between $x = 1$ and $x = 3$

3. Make a sketch of the graph of $f(x)$ and use this to explain why your answers to the previous two questions are plausible.

4. Find the average rate of change between x and $x + h$.