2.4 Slope as a Rate of Change

Study 2.4 # 1, 7, 9, 17, 19

Class Notes: Prof. G. Battaly, Westchester Community College, NY

College Algebra Home Page

Homework Problems

2.4 Slope as a Rate of Change

Montauk Point is 150 miles from home.

It takes me 3 hours to get there.

What is my average speed?

2.4 Slope as a Rate of Change

Montauk Point is 150 miles from home.

In 1 hour I am at mile marker 50 miles.
In 2 hours I am at mile marker 100 miles.

What is my average speed?

$\bar{v}$ is interpretation of a slope

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Homework Problems

2.4 Slope as a Rate of Change

$\bar{v}$ = average **rate of change**
of distance
with respect to time.

$$\bar{v} = \frac{\Delta d}{\Delta t} = \frac{\text{end distance - start distance}}{\text{end time - start time}}$$

2.4 Slope as a Rate of Change

$\bar{v}$ = average **rate of change**
of distance
with respect to time.

Montauk Point is 150 miles from home.

In 1 hour I am at mile marker 50 miles.
In 2 hours I am at mile marker 100 miles.

What is my average speed?

Need to identify Start and End amounts:

Variable	Start	End
Distance(miles)	50	100
Time(hours)	1	2

$$\bar{v} = \frac{\Delta d}{\Delta t} = \frac{\text{end distance - start distance}}{\text{end time - start time}}$$

$$\bar{v} = \frac{100 \text{ mi} - 50 \text{ mi}}{2 \text{ hr} - 1 \text{ hr}} = \frac{50 \text{ mi}}{1 \text{ hr}} = 50 \text{ mi/h}$$

2.4 Slope as a Rate of Change

G: Pittsburgh Population was 370,000 in 1990
311,000 in 2007

F: Ave rate of change in poplation per year.

Need to identify Start and End amounts:

Variable	Start	End
Population		
Year		

$$\text{Ave} = \frac{\Delta p}{\Delta t} = \frac{\text{end population - start population}}{\text{end year - start year}}$$

$$\text{Ave} = \frac{\square \text{ people} - \square \text{ people}}{\square - \square}$$

$$= \square \text{ people/yr}$$

Interpretation: Pittsburgh population is declining at the rate of _____ people/year.

2.4 Slope as a Rate of Change

G: Pittsburgh Population was 370,000 in 1990
311,000 in 2007

F: Ave rate of change in poplation per year.

Need to identify Start and End amounts:

Variable	Start	End
Population	370,000	311,000
Year	1990	2007

$$\text{Ave} = \frac{\Delta p}{\Delta t} = \frac{\text{end population - start population}}{\text{end year - start year}}$$

$$\text{Ave} = \frac{311{,}000 \text{ people} - 370{,}000 \text{ people}}{2007 - 1990}$$

$$= -3{,}470.6 \text{ people/yr}$$

Interpretation: Pittsburgh population is declining at the rate of 3,471 people/year.

2.4 Slope as a Rate of Change

#10 and #18

2.4 Slope as a Rate of Change

Montauk Point is 150 miles from home.

In 1 hour I am at mile marker 50 miles.
In 2 hours I am at mile marker 100 miles.

How long will the trip take?

2.3 Function Notation

Interpreting Functions:

p. 86 #82

2.3 Function Notation

Interpreting Functions:

p. 86 #82

