

Written assignments
to hand in.

Section 2.2

38, 52

Due Tuesday 10/17

Section 2.3

8, 44

Due Wednesday 10/18

Section 2.4

18, 38

Due Friday 10/20

Section 2.5

42, 56

Due Monday 10/23

Discussion Problems

From the department syllabus
These are not to hand in.

Sections 2.3, 2.4

WebAssign

Sections 2.01+2.2

Due Tuesday 10/17, 9pm.

Sections 2.3+2.4

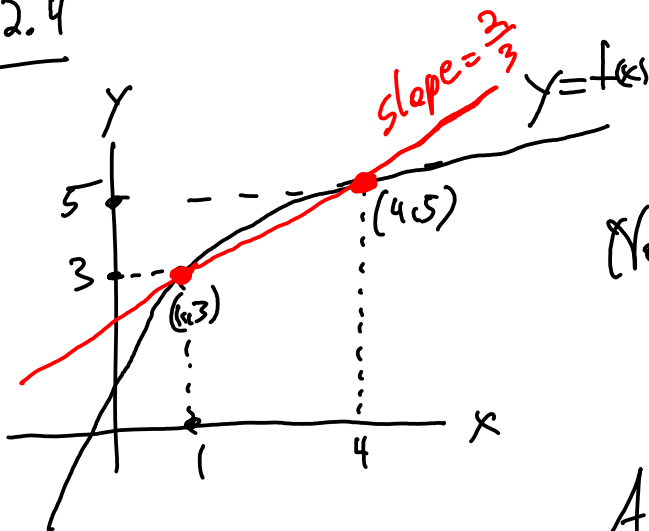
Due Friday 10/20, 9pm

Exam 2 will be covering

1.6-1.8, 2.1-2.8

section 2.4

(7)



$$\begin{aligned} \text{Net change} &= f(4) - f(1) \\ 1 \leq x \leq 4 &= 5 - 3 = \textcircled{2} \end{aligned}$$

$$\begin{aligned} \text{Avg rate} \\ \text{of change} &= \frac{f(4) - f(1)}{4 - 1} = \textcircled{\frac{2}{3}} \end{aligned}$$

$$(17) f(x) = x^3 - 4x^2$$

find net change
and avg rate of
change on $[0, 10]$

$$\text{Net change} = f(10) - f(0)$$

$$0 \leq x \leq 10$$

$$= (1000 - 400) - 0 = \textcircled{600}$$

$$\text{Avg rate of change} = \frac{f(10) - f(0)}{10 - 0} = \frac{600}{10} = \textcircled{60}$$

$$0 \leq x \leq 10$$

(25) $f(x) = \frac{1}{2}x + 3$ find the average rate of change
on $a \leq x \leq b$.

$$\text{avg rate of change} = \frac{f(b) - f(a)}{b - a} = \frac{(\frac{1}{2}b + 3) - (\frac{1}{2}a + 3)}{b - a}$$

$a \leq x \leq b$

$$= \frac{\frac{1}{2}b + \cancel{3} - \frac{1}{2}a - \cancel{3}}{b - a} = \frac{\frac{1}{2}b - \frac{1}{2}a}{b - a} = \frac{\frac{1}{2}(b - a)}{\cancel{b - a}} = \textcircled{\frac{1}{2}}$$

which is
the slope
of the linear
function.

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2: Functions

Answer

30. **Population Growth and Decline** The graph shows the population P in a small industrial city from 1950 to 2000. The variable x represents the number of years since 1950.

a. What was the average rate of change of P between $x = 20$ and $x = 40$?

b. Interpret the value of the average rate of change that you found in part (a).

31. **Population Growth and Decline** The table gives the population in a small coastal community for the period 1997–2006. Figures shown are for January 1 in each year.

$$\textcircled{a} \quad \text{Avg Rate of change}_{20 \leq x \leq 40} = \frac{P(40) - P(20)}{40 - 20} = \frac{40 - 40}{20} = \frac{0}{20} = 0 \quad \frac{\text{thousand persons}}{\text{year}}$$

\textcircled{b} The average rate of change is 0. This means the net change in population is 0. In this case the population rose and then fell. In other examples it might mean population is unchanged throughout the interval, or population fell and then rose. Or some combination.