Review

Student Text Pages
192 to 193

Suggested Timing
75 min

Tools
- grid paper
- graphing calculator

Related Resources
- G–1 Grid Paper
- G–5 Number Lines
- BLM 3–8 Chapter 3 Review

Study Guide

Use the following study guide to direct students who have difficulty with specific questions to appropriate examples to review.

Question	Section(s)	Refer to
1	3.1	Example 1 (pages 149–150)
2	3.1	Example 1 (pages 149–150)
3	3.1	Example 1 (pages 149–150), Example 2 (page 151)
4	3.2	Example 1 (pages 158–160)
5	3.2	Example 1 (pages 158–160), Example 2 (pages 160–162), Example 3 (pages 162–163)
6	3.2	Example 2 (pages 160–162)
7	3.2	Example 3 (pages 162–163)
8	3.3	Example 1 (pages 169–170)
9	3.3	Example 2 (pages 171–173)
10	3.3	Investigate (page 168), Example 2 (pages 171–173)
11	3.4	Example 1 (pages 177–178)
12	3.4	Example 2 (page 178)
13	3.4	Example 3 (pages 179–180), Example 4 (pages 180–182)
14	3.4	Example 4 (pages 180–182)
15	3.5	Example 1 (pages 186–187), Example 2 (page 187)
16	3.5	Example 3 (page 188)

Differentiated Instruction

Use a **crossword puzzle** to review terminology.

Problem Wrap-Up

Student Text Page
193

Suggested Timing
40–60 min

Tools
- grid paper
- graphing calculator

Related Resources
- G–1 Grid Paper
- BLM 3–9 Chapter 3 Problem Wrap-Up Rubric

Summative Assessment
- Use **BLM 3–9 Chapter 3 Problem Wrap-Up Rubric** to assess student achievement.

Using the Chapter Problem

- Introduce the problem to the class. Ensure that ESL students and weak readers understand the context of the problem and the steps required.
- Provide students with a copy of the rubric.
- Discuss what goes into a good report—graphs, calculations, and a summary of the findings and recommendations, in words, referring to specific evidence, where applicable.
- You may wish to allow students to use their notes and textbook as aids in answering this problem.

Level 3 Sample Response

a) Domain of $C(p)$: $\{p \in \mathbb{R}, 0 \leq p < 100\}$
Range of $C(p)$: $\{C \in \mathbb{R}, C \geq 0.2\}$
Domain of $R(p)$: $\{p \in \mathbb{R}, 0 \leq p < 100\}$
Range of $R(p)$: $\{R \in \mathbb{R}, R \geq 0.002\}$
The initial cost of the cleanup is \$200 000, which increases without bound as the oil cleaned up approaches 100%. Similarly, the rate of change of the cost is initially \$2000/percent and it increases without bound as the oil cleaned up approaches 100%.

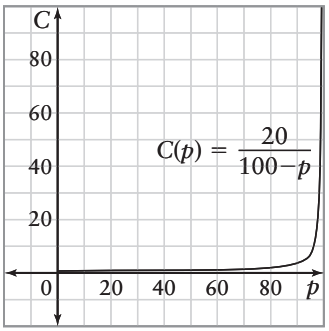
b) $C(50) = 0.4$

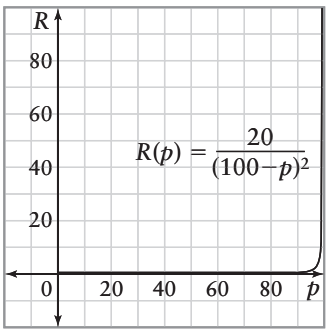
p	$C(p)$	Slope with $C(50) = 0.4$
50.1	0.4008016	0.008016
50.01	0.400080016	0.0080016
50.001	0.40000800016	0.00800016

The rate of change approaches 0.008, or \$8000/percent cleaned up.

c) $R(50) = 0.008$, or \$8000/percent cleaned up. The rate of change is equal to that found in part b).

d) The initial cost of the cleanup of the oil is \$200 000 and it increases without bound as the oil cleaned up approaches 100%. This is also true about the rate of change. This can be seen in the graphs and chart shown.





Percent Cleanup, p	Cost, C, in dollars	Rate of Change, R, in dollars/percent cleaned up
25	266 666.67	3555.56
50	400 000.00	8000.00
90	2 000 000.00	200 000.00

The rate of change of the cleanup is increasing rapidly, so a cleanup of more than 90% would be much more expensive. Clearly, there should be a budget of at least $2 000 000 in order to clean up at least 90% of the oil spill.

Level 3 Notes

- Provides accurate calculations for parts a), b), and c), perhaps with minor non-procedural errors
- Includes clear explanation of the answers in parts a), b), and c)
- The report summarizes the costs and rates of change using graphs and charts, including a few clear sentences of explanation

What Distinguishes Level 2

- Calculations may have some procedural errors
- Explanations are not clearly written or missing some components
- The report may be missing a graph or components of the chart
- The report may not include sentence explanations

What Distinguishes Level 4

- Explanations are detailed and extensive
- The comparison in part c) may give detailed background into the differences between instantaneous and average rates of change
- The report is detailed and extensive and may include recommendations to the organization doing the cleanup
- The report may include a comparison between the two methods of finding the rates of change