

Directions: Work all problems in the assignment. If you need more room use the back of the page to complete the problem.

Section 1.5

Problem 32. Find the limit if it exists.

$$\lim_{x \rightarrow -2} \frac{3x + 1}{2 - x}$$

Problem 48. Find the limit if it exists.

$$\lim_{x \rightarrow 1} \frac{x^3 - 1}{x - 1}$$

Problem 54. Find the limit if it exists.

$$\lim_{\Delta x \rightarrow 0} \frac{4(x + \Delta x) - 5 - (4x - 5)}{\Delta x}$$

Problem 70 You deposit \$1000 in an account that is compounded quarterly at an annual rate of r in decimal form. The balance at the end of 10 years is given by

$$A = 1000 \left(1 + \frac{r}{4}\right)^{40}$$

Does the limit of A exist as the interest rate approaches 6%. If so, what is the limit.

Section 1.6

Problem 18. Determine the intervals on which the following function is continuous.

$$f(x) = \frac{x - 3}{x^2 - 9}$$

Problem 26. Describe the intervals on which the following function is continuous.

$$f(x) = \begin{cases} 3 + x, & x \leq 2 \\ x^2 + 1 & x > 2 \end{cases}$$

Problem 39. Sketch the graph of the following function.

$$f(x) = \frac{2x^2 + x}{x}$$

Section 3.6

Problem 16. Find the limit if it exists.

$$\lim_{x \rightarrow -2^-} \frac{1}{x + 2}$$

Problem 28. Find the limit if it exists.

$$\lim_{x \rightarrow \infty} \frac{x^3 - 2x^2 + 3x + 1}{x^2 - 3x + 2}$$

Problem 58. A business has a cost in dollars of $C = 0.5x + 500$ for producing x units.

- (a) Find the average cost \bar{C} .
- (b) Find \bar{C} when $x = 250$ and $x = 1250$.
- (c) What is the limit of \bar{C} as x tends to infinity.

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Lesson Number: 1

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