



**Calculus w/Business Applications
Mid-term Topic Outline**

1. Simplify algebraic expressions: rationalize numerators, factor rational exponents, etc.
2. Determine the slope of a line and/or equation of a line [given a point & a slope, two points], answer in slope-intercept form
3. Determine the equation of horizontal & vertical lines
4. Determine a supply or demand curve from given information
5. Determine equilibrium price & quantity, break-even quantity and point
6. Determine cost or revenue function from given information
7. Find Profit function from given information
8. Determine the domain and range of a function
9. Sketch a quadratic function using shifts and translation
10. Identify the vertex, axis of symmetry, and/or maximum/minimum of a given quadratic function

11. Find/simplify difference quotient for a given function
12. Evaluate the limit of a function including from the left, right, and approaching $\pm\infty$ and absolute values
13. Determine the continuity of a function at a given point
14. Determine slope of the secant line/average rate of change and/or the slope of the tangent line/instantaneous rate of change of a given function
15. Find the equation of the tangent line at a given point to a given function (includes horizontal tangent lines)
16. Determine the derivative of a functions using the limit definition
17. Evaluate the derivative at a given point
18. Determine whether a function is differentiable at a given value of x
19. Find the derivative of a function using basic sum, difference, power, product, quotient, and chain rules

20. Use First & Second Derivative Tests to determine extrema of a given function & sketch the graph of the function (these include polynomial & rational functions)
21. Find Absolute Extreme values (both closed and open intervals)
22. Find requested Marginal values for a given function
23. Find requested Differentials for a given function
24. Find first &/or second derivative of implicit functions
25. Solve applications using the derivative properties (includes Marginal Cost, Marginal Revenue, Marginal Profit, related rates) – applications of any of the above functions & concepts

Chapter Reviews & Tests

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|-------|----------------|-------------------------------|------------|
| Ch. R | Review, p. 85 | 1 – 14, 16 – 49; Test, p. 88 | 1 – 21 |
| Ch. 1 | Review, p. 190 | 1 – 50, 52 – 53; Test, p. 192 | 1 – 38 |
| Ch. 2 | Review, p. 301 | 1 – 45, 48, 50; Test, p. 303 | 1 – 25, 32 |

Practice every other odd to as many as you feel you need.

And Study your Take-home and On-Line Quizzes