MAC2311 Test 2
3.1-3.7 (Derivatives)

3.1 The Derivative and the Tangent Line Problem
    Major Objectives
- Find the derivative using the limit definition (3.1 Exercises 11-24)
- Find the slope of the tangent line (3.1 Exercises 5-10)
- Find the equation of the tangent line (3.1 Exercises 25-32)

    Memorize
- The limit definition of the derivative. (pg 119)
- Slope of the tangent line is the derivative evaluated at a point.
- Point slope form of a line to find the tangent line

3.2 Basic Differentiation
    Major Objectives
- Find the derivative using the basic power rule (3.2 Exercises 3-18, 39-48)
- Find the derivative of trigonometric functions (3.2 Exercises 19-22, 49-50)
- Find the derivative of exponential functions (3.2 Exercises 23-24, 51-52)
- Find the slope of the tangent line (3.2 Exercises 31-38)
- Find the equation of the tangent line (3.2 Exercises 53-56)
- Find the horizontal tangent line (3.2 Exercises 57-64)

3.3 Product and Quotient Rules and Higher-Order Derivatives
    Major Objectives
- Find the derivative using the product rule (3.3 Exercises 1-6,)
- Find the derivative using the quotient rule (3.3 Exercises 7-12)
- Find the derivative using both rules (3.3 Exercises 41-58)
- Find higher-order derivatives (3.3 Exercises 97-110)
- Position Function, Velocity Function, Acceleration Function (3.3 Exercises 123-124)
- Find the equation of the tangent line (3.3 Exercises 67-74)
- Find the horizontal tangent line (3.3 Exercises 79-82)

3.4 The Chain Rule
    Major Objectives
- Find the derivative using the chain rule (3.4 Exercises 7-34, 47-104, 137-152)
- Find the slope of the tangent line (3.4 Exercises 43-46)
- Find the equation of the tangent line (3.4 Exercises 113-120)
- Find the horizontal tangent line (3.4 Exercises 123-124)

3.5 Implicit Differentiation
    Major Objectives
- Find the derivative using implicit differentiation (3.5 Exercises 1-20)
- Find the derivative using logarithmic differentiation (3.5 Exercises 65-76)
- Find the equation of the tangent line (3.5 Exercises 45-48)
- Find the horizontal tangent line (3.5 Exercises 63-64)

3.6 Derivatives of Inverse functions
Major Objectives
- Find the derivative of inverse trigonometric functions (3.6 Exercises 23-48)
- Find the equation of the tangent line (3.6 Exercises 49-54)

3.7 Related Rates
Major Objectives
- Solve related rate word problems (3.7 Exercises 11-38)

Memorize
Derivative Formulas 1-24 on page 177.