Multivariable Calculus HW 1

Name_____ Date_____

Do all work on a separate sheet of paper. Copy each problem and then provide the solution.

Solutions should be neatly presented; otherwise they will not be accepted.

1. Consider the circle whose equation is given by $x^2 + y^2 = 25$. Find the equation of the line tangent to the circle at the point (3,4). Offer a second method for finding the slope of the tangent line.

2. Use calculus to find the absolute maximum value of the function $f(x) = -(x^2 - 7x + 10)$, and interpret the result geometrically. Suggest a non-calculus alternative.

3. Use calculus to find the area of the plane region bounded by the graphs of y = x, y = 2x, and x = 3. Verify your answer geometrically.

4. For each of the above problems, suggest how each problem might be phrased in a multidimensional context. Write 1-2 complete sentences for each problem.

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