

Equation of a Tangent Line Problem

You may work in pairs or alone. This project is due on October 17.

1. PICK A FUNCTION. Do not use a simple mother function.

Examples include $f(x) = x^3 + 4x^2 + 3x - 7$ or $f(x) = 3\sin 2x$

2. GRAPH and TABLE of values.
 - a. Make an x-y table of the points you are graphing. Use intervals of 0.1 or 0.05. Your domain should be small (say [0, 0.4]).
 - b. Graph the function over the interval. Make sure your axes are clearly labeled and that your graph is legible and neat.
3. Pick a point at which you will determine the equation of the tangent line.
 - a. Determine the equation of the tangent line using calculus. Show all work. Label this work "Calculus Way".
 - b. Determine the equation of the tangent line using the symmetric difference quotient. Show all work. Label this work "Symmetric Difference Quotient -9th grade way".
4. Compare the two y intercepts. What is the % error in the y intercept using the symmetric difference quotient? Let the calculus answer be your "correct value."

$$\% \text{ error} = \frac{\text{error amount}}{\text{correct value}} \times 100$$

Maximum points for each section= 10 points

Table	
Graph	
Equation of tangent line on graph	
Derivative calculus way	
Equation of tangent line-calculus way	
Derivative Symmetric Difference Quotient	
Equation of tangent line-sym diff quotient	
% error	
Complexity of function	
Readability of poster	