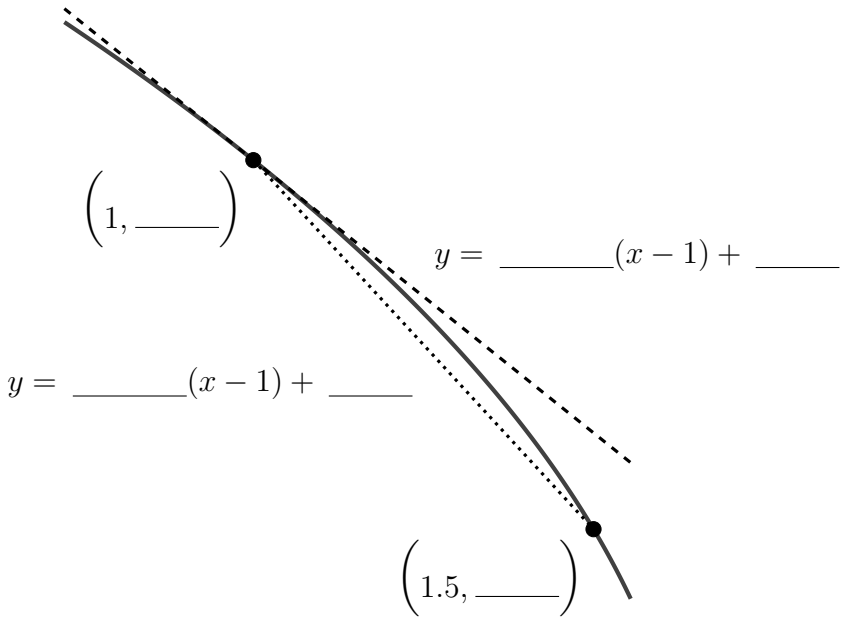
MATH 1450 **Name:**_____

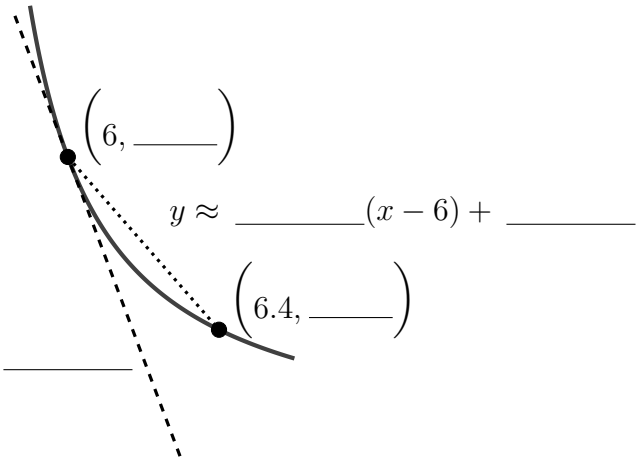
Activity 4

In class we've been discussing the derivative and how it relates to both the average and instantaneous rate of change of a function. This activity is intended to give some extra practice using the definitions from class and to explore the meaning of the derivative. Although you'll be working in groups, each person needs to turn in their own completed copy of the activity.

1. Let $f(x) = 5x - 3x^2$. In the picture below, the solid curve is the graph of f, the dotted line connects the points $\big(1, f(1)\big)$ and $\big(1.5, f(1.5)\big)$ on the graph, and the dashed line is the line tangent to the graph at $x = 1$. First, use the limit definition of the derivative to find $f'(1)$. Then fill in the indicated blanks on the graph.



2. Let $g(x) = \dfrac{3}{2x+4}$. In the picture below, the solid curve is the graph of g, the dotted line connects the points $\big(6, g(6)\big)$ and $\big(6.4, g(6.4)\big)$ on the graph, and the dashed line is the line tangent to the graph at $x = 6$. First, use the limit definition of the derivative to find $g'(6)$. Then fill in the indicated blanks on the graph.



3. Write a sentence or two about what the derivatives you found in the previous problems represent.