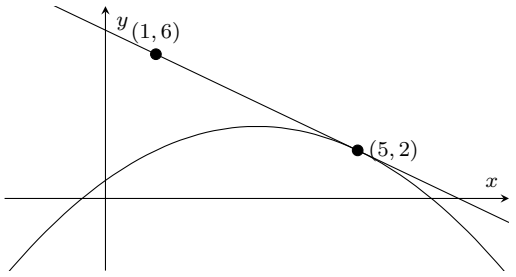
Name _____

Homework 6
Section 2.6

1. (3) Given that $f(x) = 1.5x^4 - 7x^2 + 5x + 8$ and $f'(x) = 6x^3 - 14x + 5$, determine the equation of the line which is tangent to the graph of $f(x)$ at $x = 2$.

2. (2) The following figure depicts a function $g(x)$ and its tangent line at a point. Use the figure to fill in the blanks.



$g(5) =$ _____

$g'(5) =$ _____

3. (4) Determine the instantaneous rate of change of $f(x) = x^2 + 3x$ at $x = 1$.

4. (2,4,5) Suppose the temperature (in °F) at a time t hours after midnight on a particular day can be modeled by the function $f(t) = 40 - 2t + 0.25t^2$.

   (a) What is $f(8)$? What is the practical interpretation of this number?

   (b) What is the average rate of change of $f(t)$ from $t = 6$ to $t = 12$? What is the practical interpretation of this number?

   (c) What is the instantaneous rate of change of $f(t)$ at $t = 10$? What is the practical interpretation of this number?