6. [13 points] Suppose $n(x) = (x + \frac{1}{2})e^x$.

     a. [4 points] Using the limit definition of the derivative, write an explicit expression for $n'(2)$. Your expression should not contain the letter "n". Do not try to evaluate your expression.

$$n'(2) = \underline{\hspace{6in}}$$

The derivative of $n(x)$ is $n'(x) = (x + \frac{3}{2})e^x$.

     b. [3 points] Using the given formula for $n'(x)$, write an equation for the tangent line to the graph of $n(x)$ at $x = 2$.

     c. [3 points] Write an equation for the tangent line to the graph of $n(x)$ at $x = a$ where a is an unknown constant.

     d. [3 points] Using your answer from (c), find a value of a so that the tangent line to the graph of $n(x)$ at $x = a$ passes through the origin.