Name: _____

1. (10 pts.) Is it possible to have a continuous and differentiable function f that satisfies the following:

   - $f(0) = -1$
   - $f(2) = 4$
   - $f'(x) \leq 2$ for all values of x.

   If so, sketch a graph of such a function f. If not, justify why not.

2. (10 pts.) Information about a function f and its derivative is given in the table below.

   (a) Find the linear approximation $L(x)$ of $f(x)$ at $x = 4$.
   Write your answer in the form $L(x) = mx + b$.

x	0	2	4	6	8	10
$f(x)$	-3	-2	1	6	6	3
$f'(x)$	5	3	2	1	0	-2

   (b) Use this to find an approximate value of $f(4.5)$.