

3. [5 points] Let

$$K(u) = \arctan(u^2 + 3u).$$

Use the limit definition of the derivative to write an explicit expression for  $K'(2)$ . *Your answer should not involve the letter  $K$ . Do not attempt to evaluate or simplify the limit.* Write your final answer in the answer box provided below.

Answer:  $K'(2) =$

4. [6 points] Suppose  $b(x)$  is a differentiable function whose tangent line at the point  $x = 4$  is given by the linear function  $T(x)$ . To the right is a table consisting of some values of  $b(x)$  and  $b'(x)$ .

$x$	-3	-2	0	4
$b(x)$	5	1	-3	-6
$b'(x)$	-4	?	?	-1
$T(x)$				

a. [2 points] Find the values of  $T(x)$  at  $x = -3, -2, 0$ , and  $4$ , and write them into the table.

b. [2 points] Use the table to estimate  $b'(-1)$ .

Answer: \_\_\_\_\_

c. [2 points] Find an equation for the line tangent to the graph of  $y = b(x)$  at the point  $(-3, 5)$ .

Answer:  $y =$  \_\_\_\_\_