

6. [5 points] Let

$$Q(v) = 1 + \arctan(v^{2v-1}).$$

Use the limit definition of the derivative to write an explicit expression for  $Q'(4)$ . *Your answer should not involve the letter  $Q$ . Do not attempt to evaluate or simplify the limit.* Write your final answer in the answer box provided below.

Answer:  $Q'(4) =$   $\lim_{h \rightarrow 0} \frac{1 + \arctan((4+h)^{2(4+h)-1}) - (1 + \arctan(4^{2(4)-1}))}{h}$