8. [11 points] Suppose $k$ and $p$ are positive constants. Consider the function 

$$R(x) = p - \ln(x^2 + k).$$

a. [5 points] Use the limit definition of the derivative to write down an explicit expression for $R'(3)$. 
Your answer should not include the letter $R$. 
Do not attempt to evaluate or simplify the limit.

Answer: $R'(3) =$

b. [4 points] Write out all the terms for the right-hand Riemann sum with three subdivisions of equal length which approximates the integral 

$$\int_{1}^{13} R(x) \, dx.$$ 

Your answer should not include the letter $R$ but may involve $k$ and/or $p$.

c. [2 points] Is the right-hand Riemann sum with three subdivisions of equal length from part (b) an overestimate or an underestimate of $\int_{1}^{13} R(x) \, dx$, or is there not enough information to make this determination? Briefly explain your reasoning.

Answer: (Circle one choice.) 

- Overestimate
- Underestimate
- Not enough info

Reasoning: