

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: