3. Let X be a random variable that represents the number of processes currently running in your computer—between 50 and 200 processes. Let Y be a random variable that represents your computer's internal temperature—between 20 and 100 degrees Celsius. Compute the correlation between these two random variables if we model the situation with the joint density function

$$f(x, y) = \frac{k \ln x}{\sqrt{y}}$$

where k is a scaling constant. To show your work, set up all of the integrals correctly. You may then use software to perform the computations.