

1. [8 points] Radioactive waste has been draining into a lake, causing trees in the surrounding forest to wilt and die. On March 24, 2010, local scientists surveyed the surrounding forest, determining that $S(m)$ thousand trees had begun to wilt m kilometers out from the center of the lake. The scientists determined that 20 thousand trees were decaying 20 kilometers out, and 5 thousand trees were decaying 60 kilometers out.
- a. [3 points] Assume that the function S is invertible. Find the average rate of change of the inverse function S^{-1} on the interval $[5, 20]$. Write your final answer *in the space provided*, and **include units**.

The average rate of change of S^{-1} on the interval $[5, 20]$ is _____

- b. [5 points] Find a formula for $S(m)$ in terms of m , assuming that S is a power function of m . Your answer should be **exact**, and you must **show your work** carefully, writing your final answer *in the space provided*.

$S(m) =$ _____