**9:*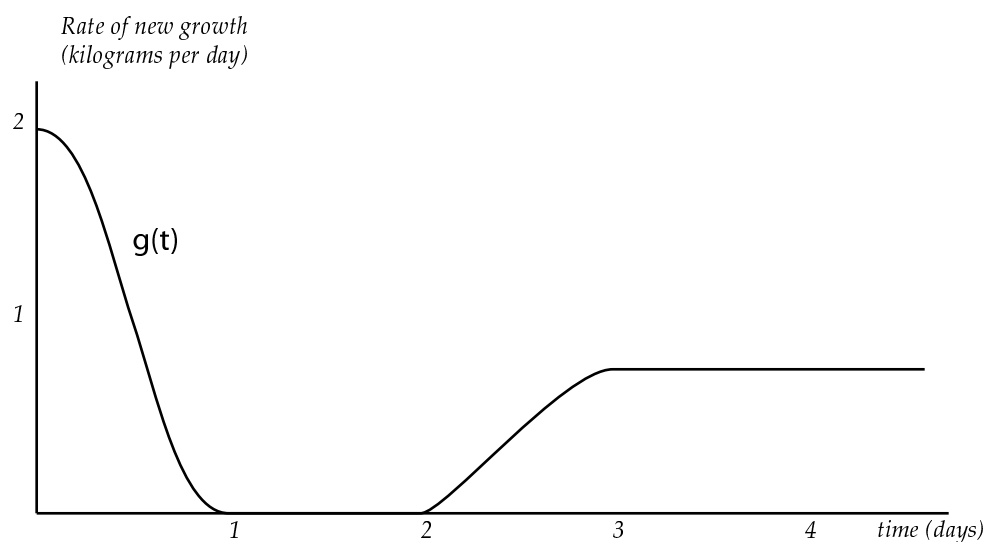* (14 pts) In springtime, as a nameless old tree quietly builds its leaves and branches by drawing matter out of the air and earth, an unnamed old botanist measures the process with care:

Rate of new growth (kilograms per day)

g(t)

time (days)

a. (2 pts) Estimate $\int_0^4 g(t)dt$.

b. (4 pts) Explain what your answer to part "a" tells you about the tree.

c. (6 pts) Sketch a possible graph of the mass of the tree as a function of time during this particular season. Label your graph carefully.

d. (2 pts) What can you say about the derivative of the function sketched in part c? Answer *briefly*.