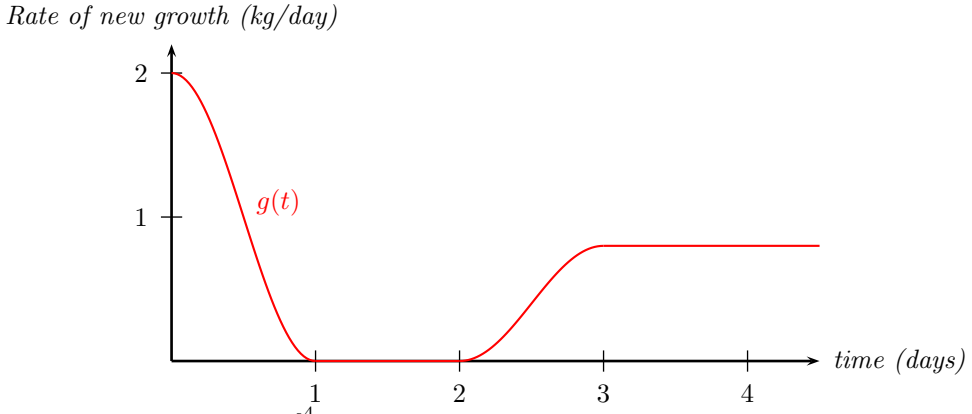
9. (14 pts) In springtime, as a nameless old tree quietly builds its leaves and branches by drawing matter out of the air and earth, an unnamed old botanist measures the process with care:



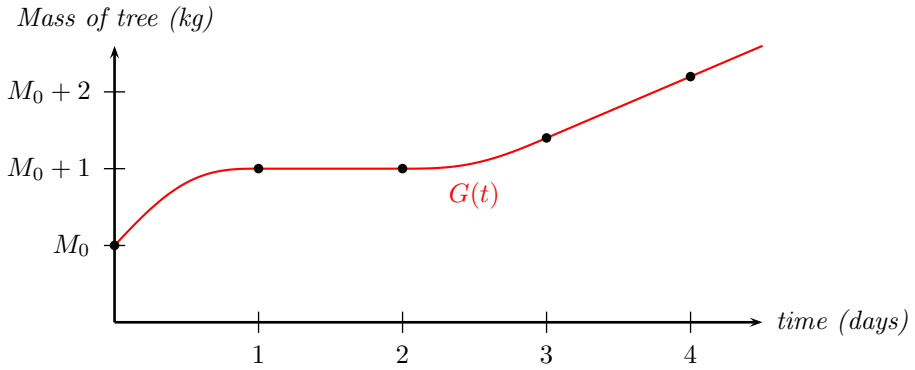
(a) (2 pts) Estimate $\int_0^4 g(t)\,dt$.

$\text{TRAP}(4) = 1\left(\frac{1}{2}g(0) + g(1) + g(2) + g(3) + \frac{1}{2}g(4)\right) = \frac{1}{2}(2) + 0 + 0 + .8 + \frac{1}{2}(.8) = \boxed{2.2}$.

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

The tree grew about 2.2 kg in the four days between time 0 and time 4.

(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.



Here M_0 is the initial mass of the tree.

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

The derivative of $G(t)$ is $g(t)$.