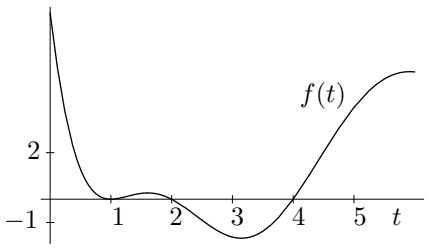
7. [10 points] Define a function F for $x \geq 0$ by $F(x) = \int_x^{2x} f(t)\,dt$, where $f(t)$ is given by the graph to the right.



(a) [4 points of 10] Find $F'(1)$ (show your work).

(b) [6 points of 10] If the second degree Taylor polynomial for $F(x)$ near $x = 1$ is $P_2(x) = a + b(x-1) + c(x-1)^2$, what is b? What is the sign of a? The sign of c? Why?