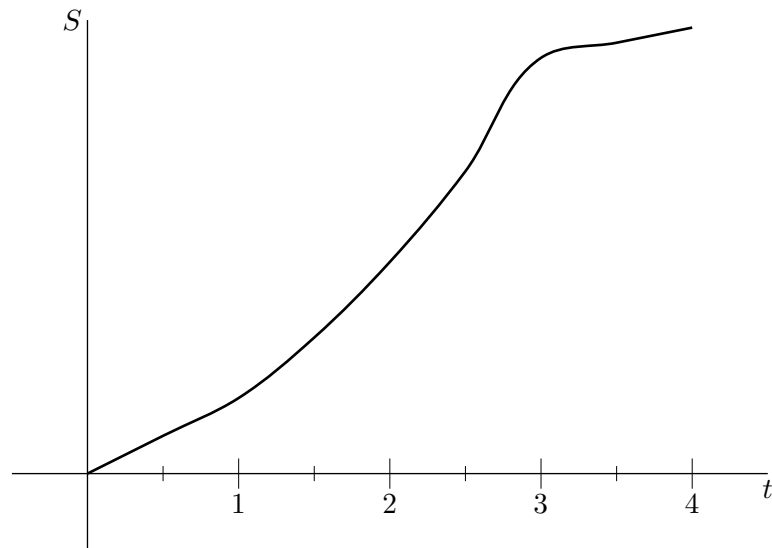7. You decide to take a weekend off and drive down to Chicago. The graph below represents your distance S from Ann Arbor, measured in miles, t hours after you set out.

Let $A(t)$ be the slope of the line connecting the origin $(0,0)$ to the point $(t, S(t))$.

(a) (3 points) What does $A(t)$ represent in everyday language?

(b) (3 points) Estimate the time t at which $A(t)$ is maximized. Write a one sentence explanation and use the graph above to justify your estimate.

(c) (4 points) Use calculus to explain why $A(t)$ has a critical point when the line connecting the origin to the point $(t, S(t))$ is tangent to the curve $S(t)$.