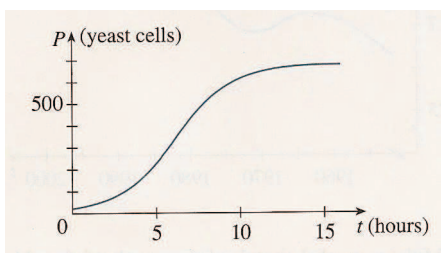
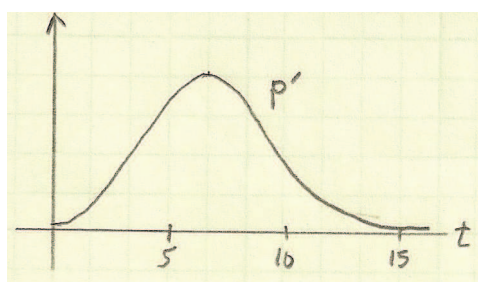


Calculus I, Section 2.8, #12
The Derivative as a Function

Shown is the graph of the population function $P(t)$ for yeast cells in a laboratory culture. Graph the derivative $P'(t)$. What does the graph of $P'(t)$ tell us about the yeast population.¹



Here's a sketch graph of the derivative. The slope of the population function is always positive, so the growth rate (derivative) is always above the t -axis.



The population grows slowly at first, and reaches a maximum growth *rate* near 6 hours. Subsequently, the growth rate $P'(t)$ approaches zero, so the population is reaching a stable level.

¹Stewart, *Calculus, Early Transcendentals*, p. 161, #12.