AP CALCULUS AB Dr. Paul L. Bailey

Homework 0505b Tuesday, May 5, 2020

Problem 1. The line ℓ is tangent to the graph of $y = x - \frac{x^2}{500}$ at the point Q, as shown in the figure below.



(a) Find the x-coordinate of the point Q.

(b) Write an equation for the line ℓ .

Problem 1 (continued). The line ℓ is tangent to the graph of $y = x - \frac{x^2}{500}$ at the point Q, as shown in the figure below.



(c) Suppose that graph of $y = x - \frac{x^2}{500}$ shown in the figure, where x and y are measured in feet, represents a hill. There is a 50-foot tree growing vertically at the top of the hill. Does a spotlight at point P directed along the line ℓ shine on any part of the tree? Show the work that leads to your conclusion.