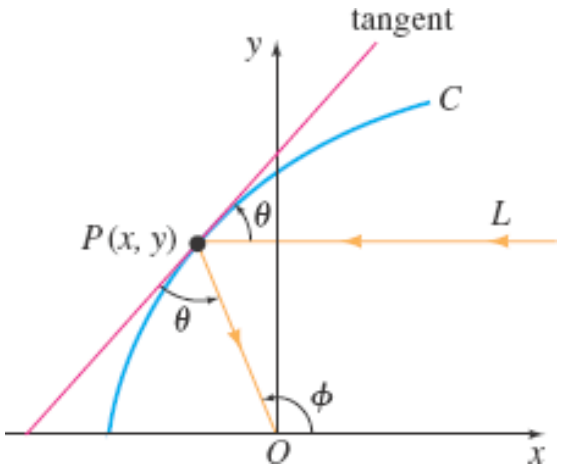
Problem Assume that when the plane curve C shown in the figure is revolved about the x-axis, it generates a surface of revolution with the property that all light rays L parallel to the x-axis striking the surface are reflected to a single point O (the origin). Use the fact that the angle of incidence is equal to the angle of reflection to determine a differential equation that describes the shape of the curve C.[1] **Express your answer in the** $y' = f(x, y)$ **format.** (**Remark**: Do NOT attempt to solve the equation, though.) [*Hint*: Inspection of the figure shows that we can write $\phi = 2\theta$. Why? Now use an appropriate trigonometric identity.]



[1]Such a curve C is important in applications ranging from construction of telescopes to satellite antennas, automobile headlights, and solar collectors.