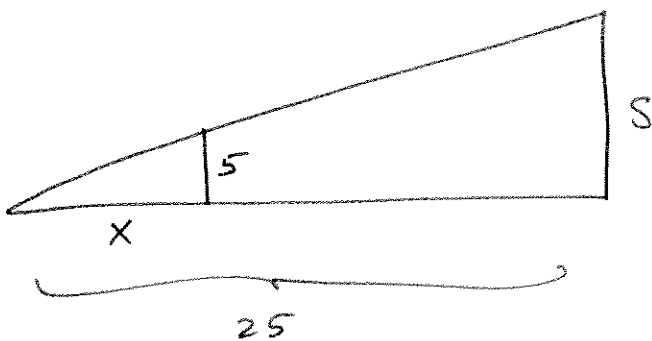


R. Bruner
Math 2010, Winter 2007, Quiz 8 reprise
2 March 2007

A spotlight is positioned at ground level 25 ft from a wall. A 5 ft tall person walks toward the wall at $\frac{2}{3}$ ft/sec. How fast is the height of the person's shadow on the wall changing when the person is 10 ft from the wall?



$$\frac{S}{25} = \frac{5}{x}$$

and

$$\frac{dx}{dt} = \frac{2}{3}$$

$$S = \frac{125}{x}$$

$$\begin{aligned} \frac{ds}{dt} &= \frac{-125}{x^2} \frac{dx}{dt} = \frac{-125}{15^2} \cdot \frac{2}{3} = \frac{-5}{9} \cdot \frac{2}{3} \\ &= \frac{-10}{27} \frac{\text{ft}}{\text{sec}} \end{aligned}$$

$$10' \text{ from wall} \iff x = 15$$