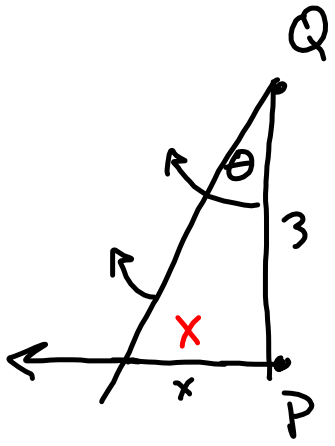


$\frac{dx}{dt}$

$\frac{x}{3} = \tan\theta$

Given $4 \frac{\text{rev}}{\text{min}}$

$= 4 \frac{\text{rev}}{\text{min}} \cdot \frac{2\pi \text{ radians}}{1 \text{ rev}}$

$= 8\pi \frac{\text{radians}}{\text{min}} = \frac{d\theta}{dt}$

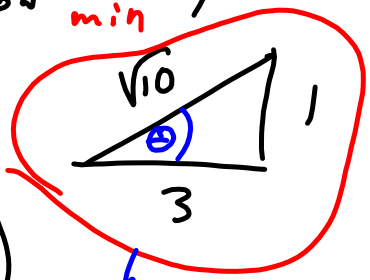
Want $\left.\frac{dx}{dt}\right|_{x=1}$

$x = 3\tan\theta$

$\frac{dx}{dt} = 3\sec^2\theta \frac{d\theta}{dt} = (3\sec^2\theta)\left(8\pi \frac{\text{radians}}{\text{min}}\right)$

$\frac{x}{3} = \tan\theta$

$x = 1 \Rightarrow \frac{1}{3} = \tan\theta \Rightarrow \theta = \arctan\left(\frac{1}{3}\right)$

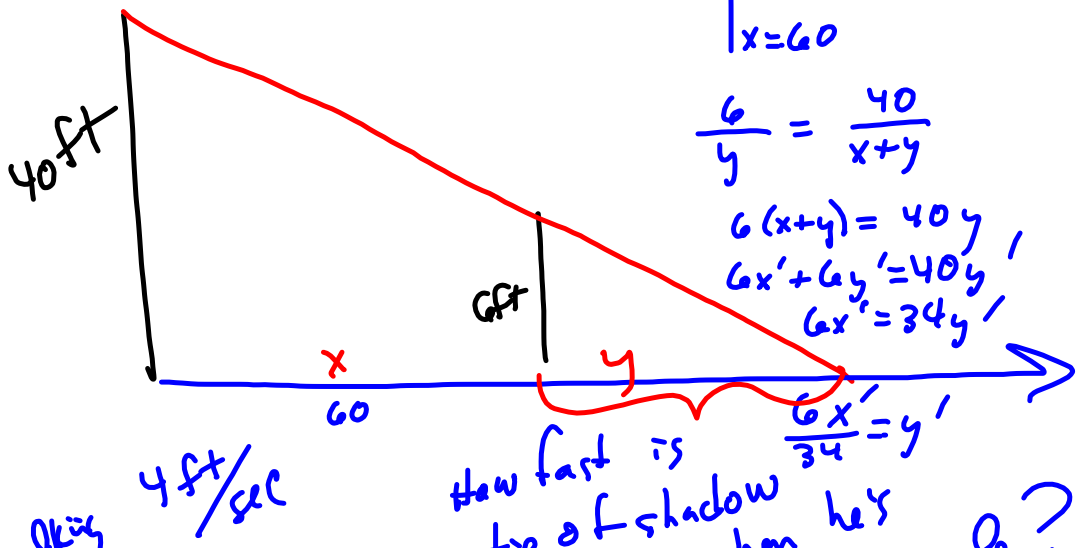


$\sec\theta = \frac{\sqrt{10}}{3}$

$\sec^2\theta = \frac{10}{9}$

$\left.\frac{dx}{dt}\right|_{x=1} = 3\left(\frac{10}{9}\right)(8\pi)$

$= \frac{80\pi}{3}$



Want $\left.\frac{d(x+y)}{dt}\right|_{x=60}$

$\frac{6}{y} = \frac{40}{x+y}$

$6(x+y) = 40y$

$6x' + 6y' = 40y'$

$6x' = 34y'$

$\frac{6x'}{34} = y'$

walking 4 ft/sec

how fast is tip of shadow changing when he's 60 ft from the pole?

$y' = \frac{3}{17}x'$

$x' = 4$

$y' = \frac{12}{17}$