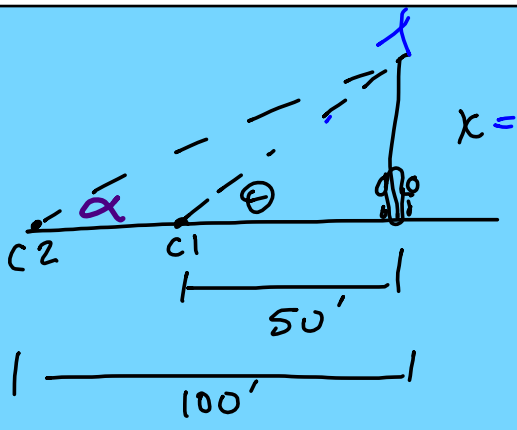
45/



$\tan\theta = \frac{x}{50}$

$\sec^2\theta \frac{d\theta}{dt} = \frac{1}{50}\frac{dx}{dt}$

$\left(\frac{50\sqrt{5}}{50}\right)^2(0.75) = \frac{1}{50}\frac{dx}{dt}$

$3.75 = \frac{1}{50}\frac{dx}{dt}$

$187.5\frac{ft}{s} = \frac{dx}{dt}$

$50^2 + 100^2 = r^2$

$2500 + 10000 = r^2$

$\sqrt{12500} = \sqrt{r^2}$

$125 \cdot 100$

$10\sqrt{125} = r$

$25 \cdot 5$

$50\sqrt{5} = r$

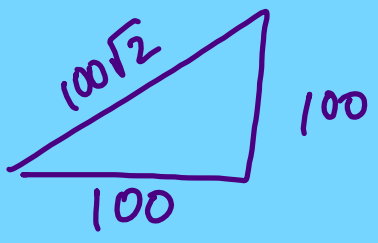
$\tan\alpha = \frac{x}{100}$

$\sec^2\alpha \frac{d\alpha}{dt} = \frac{1}{100}\frac{dx}{dt}$

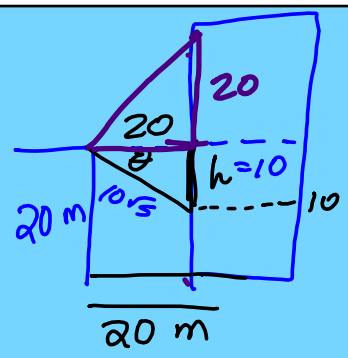
$\left(\frac{100\sqrt{2}}{100}\right)^2\frac{d\alpha}{dt} = \frac{1}{100}\cdot 187.5$

$2\frac{d\alpha}{dt} = 1.875$

$\frac{d\alpha}{dt} = 0.938\ \frac{rad}{s}$



49



$100 + 400 = r^2$

$\sqrt{500} = \sqrt{r^2}$

$10\sqrt{5} = r$

$\tan\theta = \frac{h}{20}$

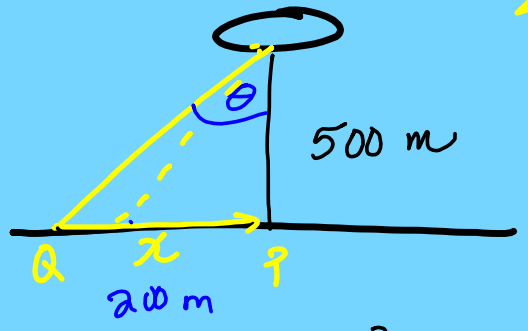
$\uparrow 5 \frac{m}{s}$

$\sec^2\theta \frac{d\theta}{dt} = \frac{1}{20}\frac{dh}{dt}$

$\left(\frac{20\sqrt{2}}{20}\right)^2 \left(\frac{10\sqrt{5}}{20\sqrt{2}}\right)^2 \frac{d\theta}{dt} = \frac{1}{20}(-5)$

$\frac{5}{4}\frac{d\theta}{dt} = -\frac{1}{4}\cdot\frac{4}{5}$

$\frac{d\theta}{dt} = \boxed{-\frac{1}{5}\ \frac{rad}{s}}$



$200^2 + 500^2 = r^2$

$40000 + 250000 = r^2$

$\sqrt{290,000} = r^2$

$100\sqrt{29}$

$4 \frac{\text{rev}}{\text{min}} = 4 \cdot 2\pi = 8\pi \frac{}{\text{min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{8\pi}{60} = \frac{2\pi}{15}$

$\tan\theta = \frac{x}{500}$

$\sec^2\theta \frac{d\theta}{dt} = \frac{1}{500} \frac{dx}{dt}$

$\left(\frac{100\sqrt{29}}{500}\right)^2 \left(-\frac{2\pi}{15}\right) = \frac{1}{500} \frac{dx}{dt}$

$500 \cdot \frac{29}{25} \cdot \frac{2\pi}{15} = 500 \frac{dx}{dt}$

$-\frac{232}{3}\pi \frac{m}{sec} = \frac{dx}{dt}$