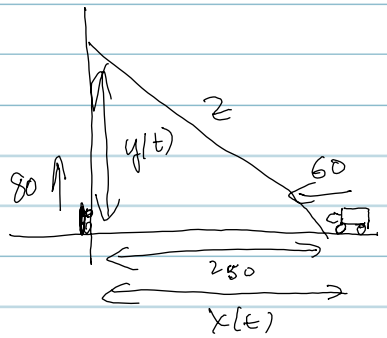
prob 9



$x = 250 - 60t$

$y = 80t$

$z^2 = x^2 + y^2$

$= (250-60t)^2 + (80t)^2$

$2z\frac{dz}{dt} = 2(250-60t)\cdot(-60) + 2(80t)80$

$\frac{dz}{dt} = 0$

$-250\cdot 60 + 60^2 t + 80^2 t = 0$

$t = \frac{250\cdot 60}{60^2+80^2} = \frac{250\cdot 60}{100^2} = \frac{150}{100}$

$3600 + 6400 = 10{,}000$

$= 1.5$

$t = 1.5$ hours 1:30 PM

prob 10 $f(x) = x^{\sin x}$

$\ln f(x) = \ln x^{\sin x} = \sin x \ln x$

$\frac{1}{f(x)} f'(x) = \cos x \ln x + (\sin x)\cdot\frac{1}{x}$

$f'(x) = f(x)\left[\cos x \ln x + \frac{\sin x}{x}\right]$

$f'(x) = x^{\sin x}\left[\cos x \ln x + \frac{\sin x}{x}\right]$