LAST Name (as seen on ROSI): _____ Tutorial Number: _____

FIRST Name (as seen on ROSI):_____ Student Number:_____

MIE 100S - Quiz number 1d: Jan 15, 2015: quiz duration = 20 minutes

At time t = 0, a particle is at (x, y) = (-3, 8) meters, and has a velocity of $4\hat{\imath} - 3\hat{\jmath}$ m/s. Its acceleration is constant, equal to $2\hat{\imath} + 3\hat{\jmath}$ m/s^2.

(a) At t = 0, find the normal component of the acceleration. Will this answer change with time? (yes or no).

(b) At time t = 0, express the unit vector $\hat{u}_\theta$, and find the angle that $\hat{u}_\theta$ makes relative to the x-axis.

(c) Find the magnitude of the position vector ($\vec{r}$) at t = 3 seconds.

$x = x_o + v_o t + \frac{1}{2} a_o t^2$; $v = v_o + a_o t$; $\vec{v} = v\,\hat{u}_t + v\theta\,\hat{u}_n = v\,\hat{u}_t + v^2/\rho\,\hat{u}_n$;