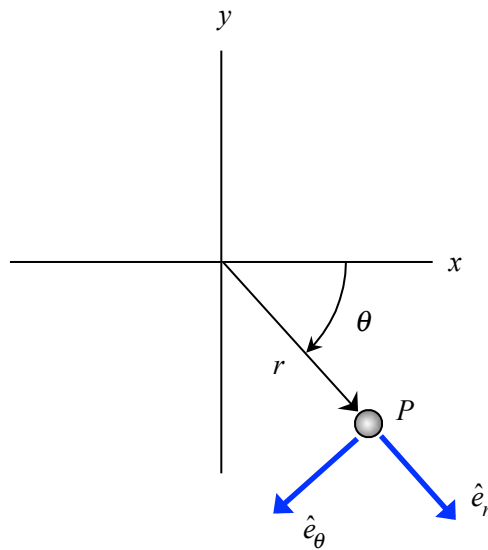


Homework H1.F

Given: Particle P moves with its position in the xy -plane given by $r(t) = r_0 + bt^2$ and $\theta(t) = ct$, where r is in terms of m and θ is in radians.

Find: For the position of P when $t = 2$ s:

- (a) determine the velocity and acceleration vectors of P in terms of their \hat{e}_r and \hat{e}_θ components.
- (b) determine the velocity and acceleration vectors of P in terms of their \hat{i} and \hat{j} components.



Use the following parameters in your work: $r_0 = 2$ m, $b = 0.5$ m/s² and $c = (\pi/2)$ /s.