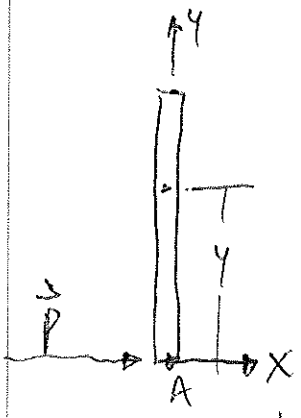
PROB. 15-106



$\omega = 0$, $\vec{a}_A = (3.6)\hat{i}\ \frac{m}{s^2}$, $\alpha\hat{k} = (6)\hat{k}\ \frac{RAD}{s^2}$

a) FIND POINT WHERE $\vec{a}_P = 0$

$$\vec{a}_P = \vec{a}_A + \alpha\hat{k} \times \vec{r}_{P/A} - \omega^2 \vec{r}_{P/A}$$

$$\vec{r}_{P/A} = (y)\hat{j}\ m$$

$$\alpha\hat{k} \times \vec{r}_{P/A} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 0 & 0 & 6 \\ 0 & y & 0 \end{vmatrix}$$

$$= [0 - (6)(y)]\hat{i} = (-6y)\hat{i}\ \frac{m}{s^2}$$

$$\vec{a}_P = (3.6)\hat{i} + (-6y)\hat{i} = 0 \Rightarrow 3.6 - 6y = 0, \quad \boxed{y = 0.6^m}$$

b) FIND POINT WHERE $\vec{a}_P = (2.4)\hat{i}\ \frac{m}{s^2}$

$$\alpha\hat{k} \times \vec{r}_{P/A} = (-6y)\hat{i}$$

$$\vec{a}_P = (3.6)\hat{i} + (-6y)\hat{i} = (2.4)\hat{i} \Rightarrow 3.6 - 6y = 2.4$$

$$y = \frac{1}{6}(3.6 - 2.4) \quad \boxed{= 0.2^m}$$