## HW 9-13 Soln)

We'll use conservation of angular momentum. As seen for the center of the merry-go-round, Jimmy's angular momentum is Rmv at the instant he jumps on. We'll assume that the merry-go-round is initially at rest. They then have the same final angular momentum. So,

$$L_{TOTAL i} = L_{TOTAL f}$$
$$Rm_J v_{J i} + 0 = (I_{MGR} + I_J)\omega_f$$

We'll treat Jimmy as a point mass and the platform as a disk.

$$\omega_{\rm f} = \frac{{\rm Rm}_{\rm J} {\rm v}_{\rm J\,i}}{{\rm I}_{\rm MGR} + {\rm I}_{\rm J}} = \frac{{\rm Rm}_{\rm J} {\rm v}_{\rm J\,i}}{\frac{1}{2} {\rm m}_{\rm NGR} {\rm R}^2 + {\rm m}_{\rm J} {\rm R}^2} = \frac{2(30)2}{\frac{1}{2} 100(2)^2 + 30(2)^2} = \frac{0.38 \text{ rad/s}}{0.38 \text{ rad/s}}$$