1. Annie (A) and Bob (B) stand on opposite sides of a spinning carousel of radius $r=3.0 \mathrm{~m}$. Annie's mass is 60 kg and Bob's is 80 kg , and the mass of the carousel is 400 kg . The carousel spins clockwise at $(1 / 4 \pi)$ revolutions per second. The $x$ and $y$-directions in the rotating carousel frame are as indicated. The $z$-direction is out of the page.

(a) What are the magnitude and direction of the fictitious "centrifugal force" on Annie? What is the magnitude and direction of the non-fictitious centripetal force on her feet?
(b) If Annie walks to the center of the carousel (and Bob stays where he is), what is the final rate of spin of the carousel?
(c) What is the direction of the Coriolis force on Annie as she walks?
(d) What is the direction of the azimuthal force on Bob as Annie walks?
