## Physics 3210, Spring 2019

1. Annie (A) and Bob (B) stand on opposite sides of a spinning carousel of radius r = 3.0 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?