

46. The magnitude of centripetal acceleration ( $a = v^2/r$ ) and its direction (towards the center of the circle) form the basis of this problem.
- (a) If a passenger at this location experiences  $\vec{a} = 1.83 \text{ m/s}^2$  east, then the center of the circle is *east* of this location. And the distance is  $r = v^2/a = (3.66^2)/(1.83) = 7.32 \text{ m}$ . Thus, relative to the center, the passenger at that moment is located 7.32 m toward the west.
  - (b) We see the distance is the same, but now the direction of  $\vec{a}$  experienced by the passenger is *south* – indicating that the center of the merry-go-round is south of him. Therefore, relative to the center, the passenger at that moment located 7.32 m toward the north.