

## Physics 151 Class Exercise: Centripetal Acceleration 2

1. A car goes around a curve on a road that is banked at an angle of  $31.5^\circ$ . Even though the road is slick, the car will stay on the road without any friction between its tires and the road when its speed is 22.7 m/s. What is the radius of the curve?

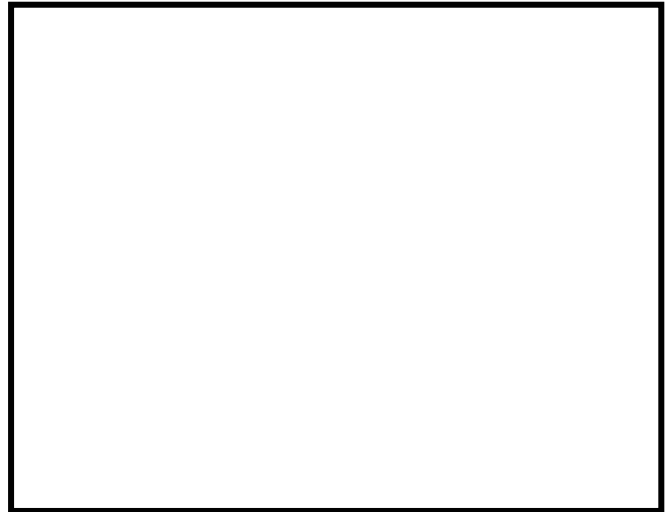
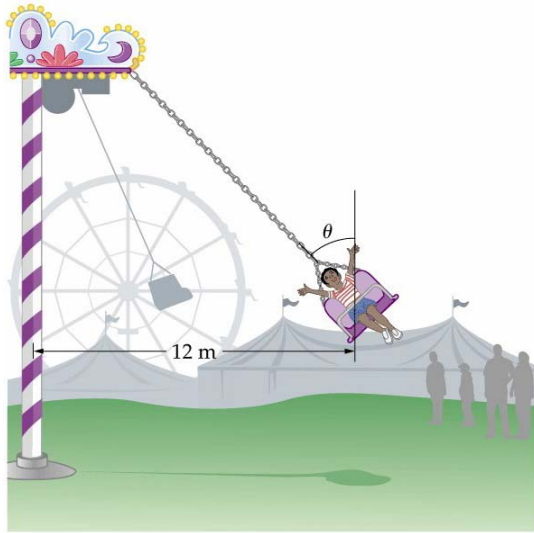


**Free Body Diagram w/Coordinate System**

Answer:	
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2. A popular ride at amusement parks is illustrated below. In this ride, people sit in a swing that is suspended from a long rotating arm. Riders are at a distance of 12 m from the axis of rotation and move with a speed of 25 mi/h.

- (a) Find the centripetal acceleration of the riders.
- (b) Find the angle  $\theta$  of the supporting wires make with the vertical.
- (c) Notice that the swings shown are at the same angle to the vertical regardless of the weight of the rider. Explain.



**Free Body Diagram w/Coordinate System**

Answer:	
Answer:	
Answer:	