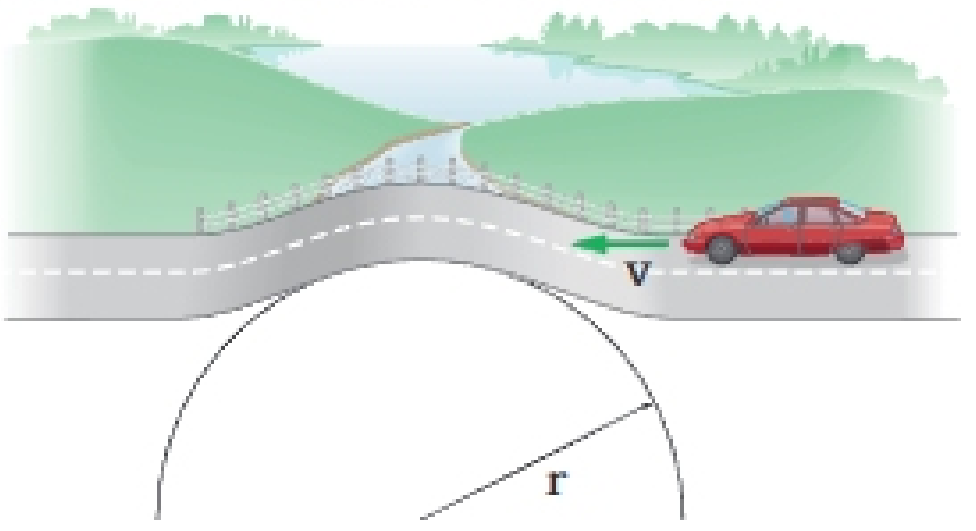
Due date: Fri Mar 6 11:59:59 pm 2015 (EST)

A car goes around a curve on a road that is banked at an angle of 30.0°. 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 24.2 m/s. What is the radius of the curve?

103 m

You are correct. Your receipt no. is 156-9468

You are driving your car over a circular-shaped bump in the road that has a radius of curvature of 51.3 m.



If the car is traveling at a constant speed of 14.4 m/s, calculate the apparent weight of your 69.2 kg passenger as you pass over the top of the bump. 399.1 N

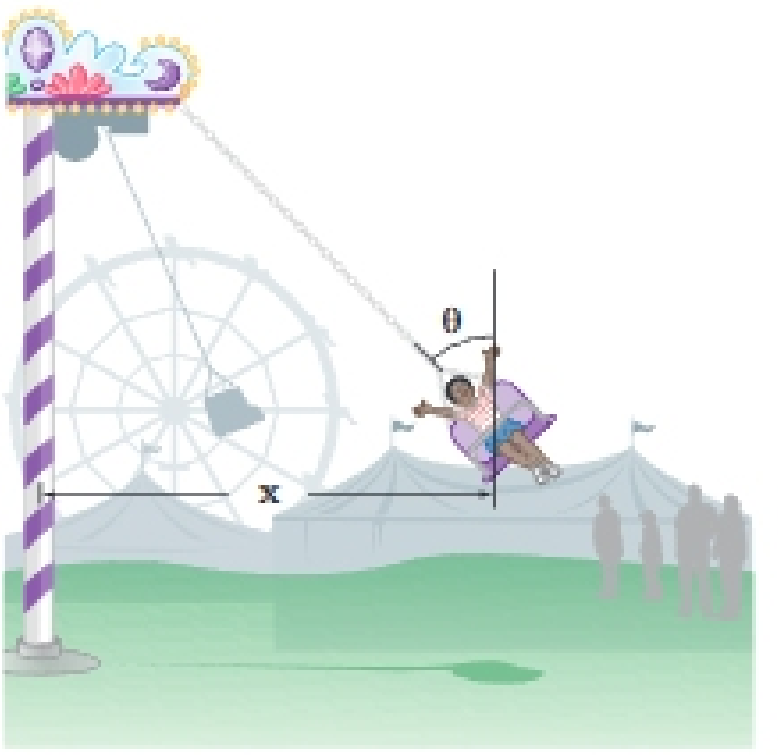
You are correct. Your receipt no. is 156-7306

What is the maximum speed that you can drive the car over the top of the bump without losing contact with the road?

22.4 m/s

You are correct. Your receipt no. is 156-7057

A popular ride at amusement parks is illustrated in the figure below.



In this ride, people sit in a swing that is suspended from a rotating arm. Riders are at a distance of $x = 10.6$ m from the axis of rotation and move with a speed of 26.0 mi/h. Calculate the centripetal acceleration of the riders.

12.7 m/s^2

You are correct. Your receipt no. is 156-3074

Calculate the angle θ the supporting wires make with the vertical.

52.4 degrees

You are correct. Your receipt no. is 156-2017

Determine whether each of the following statements is true or false.

Choices: **True**, **False**.

- T • A massive elephant can have less kinetic energy than a lightweight gazelle.
- F • Motor A does twice the work as motor B. Therefore, motor A produces twice as much power as motor B.
- F • Static friction does no work on an object.
- T • Friction can do positive work on an object.
- F • Only the net force acting on an object can do work.
- T • A slow-moving elephant can have more kinetic energy than a fast-moving cheetah.

You are correct. Your receipt no. is 156-2064

A certain amount of work W is required to accelerate a motorcycle from rest to a speed v. How much work is required to accelerate the same motorcycle from rest up to a speed $v/3$?

A. $8W/9$
B. $W/4$
C. $W/10$
D. $W/9$
E. $W/3$

You are correct. Your receipt no. is 156-1620

A 1100-kg car coasts on a horizontal road with a speed of 16.3 m/s. After crossing an unpaved, sandy stretch of road 31.1 m long, its speed decreases to 14.6 m/s. Was the net work done on the car positive, negative, or zero?

A. The network done on the car was zero
B. The net work done on the car was negative
C. The network done on the car was positive

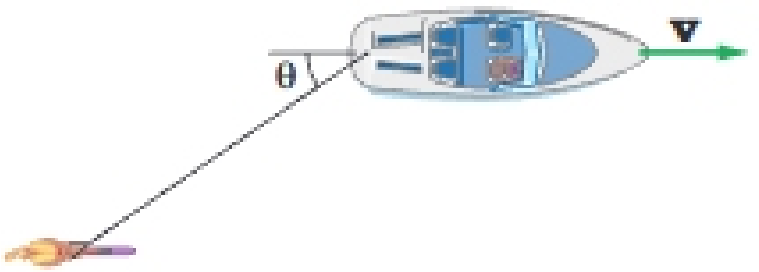
You are correct. Your receipt no. is 156-8401

Calculate the magnitude of the average net force on the car in the sandy section.

929 N

You are correct. Your receipt no. is 156-2046

Water skiers often ride to one side of the center line of a boat, as shown in the figure below.



In this case, the ski boat is traveling at 15.0 m/s and the tension in the rope is 76.5 N. If the boat does 3260 J of work on the skier in 50.8 m, what is the angle θ between the tow rope and the center line of the boat?

33 degrees

You are correct. Your receipt no. is 156-6917

(c7p64) An initially stationary 4.2 kg object accelerates horizontally and uniformly to a speed of 15 m/s in 3.0 s. In that 3.0 s interval, how much work is done on the object by the force accelerating it?

472 J

You are correct. Your receipt no. is 156-8834

What is the instantaneous power due to that force at the end of the interval?

315 W

You are correct. Your receipt no. is 156-8395

What is the instantaneous power due to that force at the end of the first half of the interval?

158 W

You are correct. Your receipt no. is 156-6230
