HW#5: Forces of friction (Due 11 pm central time, 10/14, Tuesday).
HW hint posted on course web (http://web.njit.edu/~kenahn)
HW#6: Circular motion (Due 11 pm central time, 10/21, Tuesday).

Last class...

Chapter 4: The Laws of Motion

Static and kinetic friction forces

Application of Newton’s Laws

Today.

More example

Circular Motion (B2. Ch6. Sec.1-2)

Uniform Circular Motion
Example

A car of mass $m$ is on an icy driveway inclined at an angle $20^\circ$, as in the figure below.

(a) Determine the acceleration of the car, assuming the surface is frictionless.

(b) Determine the acceleration of the car, assuming the coefficient of the kinetic friction of surface is 0.1.

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**Why do we study circular motions?**

Circular motions are everywhere around us!!!
Why do we study circular motions?
Circular motions are everywhere around us!!!

Questions:
How can we describe a circular motion?
What causes a circular motion?

First, uniform circular motion

Constant speed, or, "constant magnitude" of velocity
Motion along a circle: "changing direction" of velocity
Does the velocity change in uniform circular motion?

(a) Yes
(b) No

Direction of velocity: changing
Yes, velocity changes
Acceleration is NOT zero!
$\vec{F}_{net} = m\vec{a}$
Net force acting on the object is NOT zero.
The "net" force in circular motion is called "Centripetal force".

Centripetal force is simply a net force that is necessary for a circular motion, NOT a new type of force.