

Physics 121 – September 11, 2009

Office Hours: Thur 10:30-12:00

This week only: Fri 11:30-1:00

Assignments:

This week:

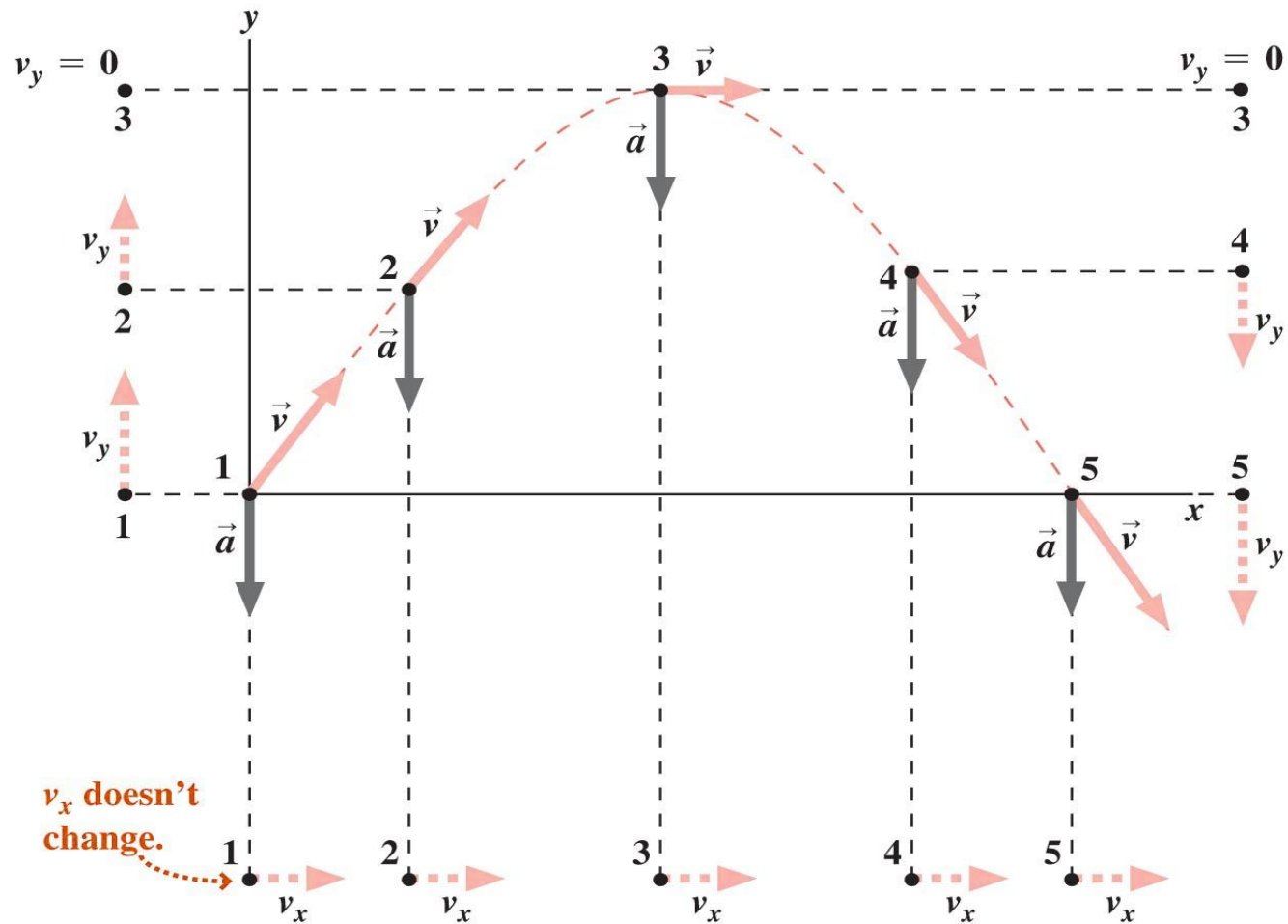
- Homework problems due Friday Sept 11
Chap 3, # 31, 38, 40, 49, 59, 63
(note -- delay #75 and 77 until *next* Friday, Sept 18)
- Mastering Physics Assignment 3 due by
Sunday, Sept 13 @ 11pm.

Next week:

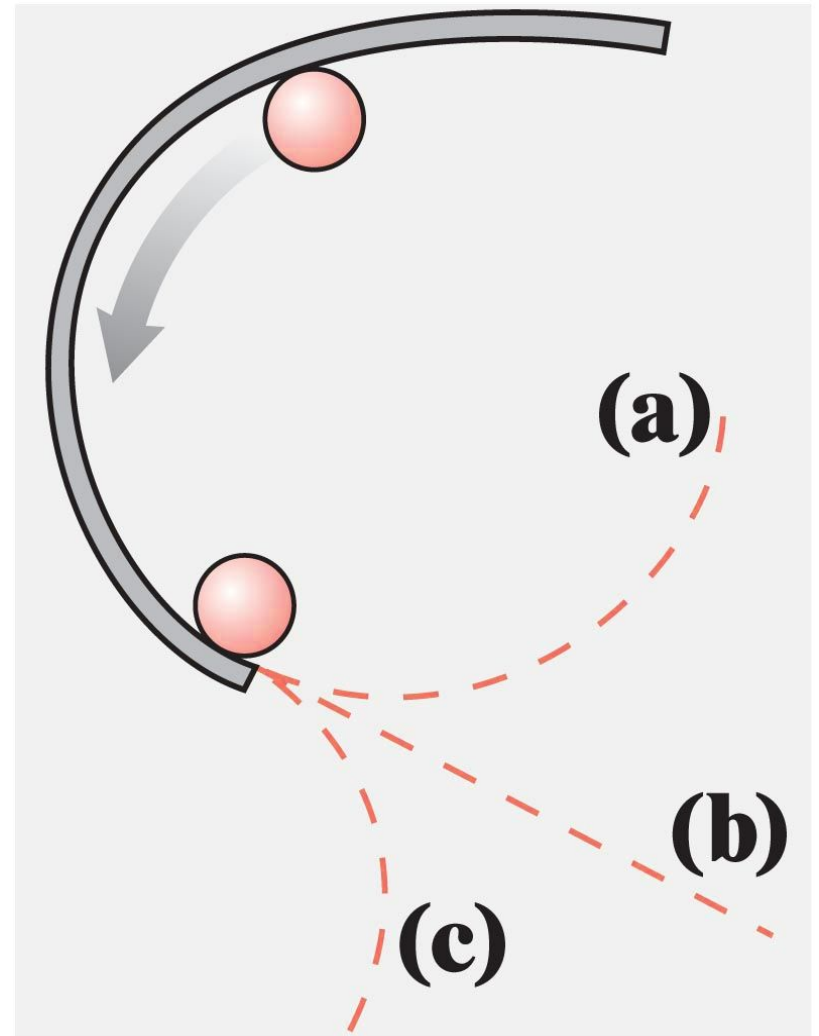
- Minschwaner on travel. No class Monday, Sept 14.
Guest lectures on Wed and Fri.
- Homework problems due on Friday, Sept 18: Chap 3
#75 and 77, plus Chap 4 #19, 20, 43, 44, 45, 46
- New MP Assignment 4 due by Sunday, Sept 20.

Projectile motion using vectors:

- 2-D motion in x-y plane
- Velocity and acceleration vectors
- Vector components



On a horizontal tabletop, a ball is guided through a circular path by a barrier as shown. After leaving the barrier, which path best describes the ball's motion?



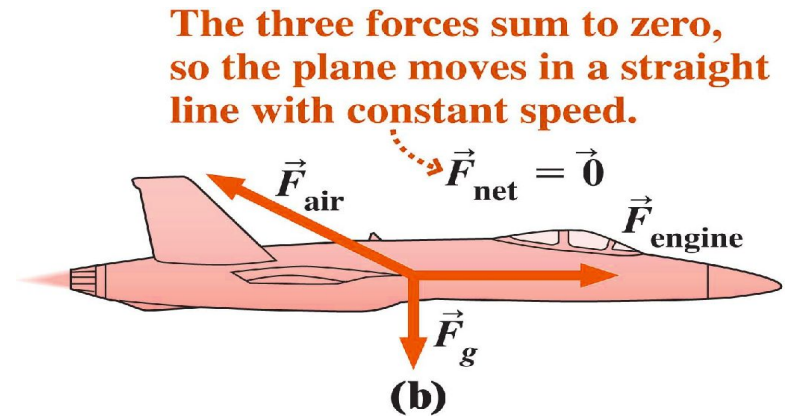
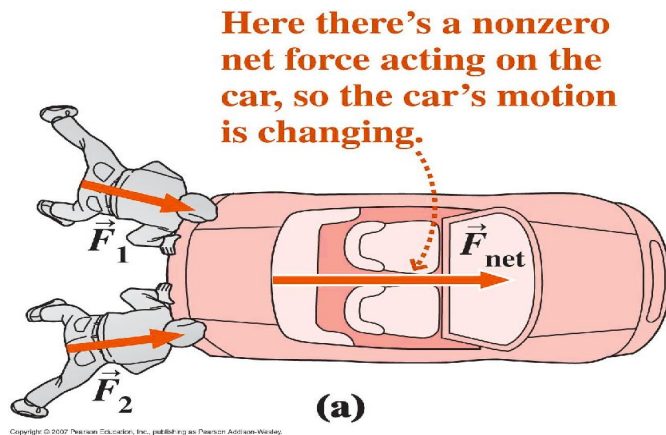
1st law

A body moving with constant velocity (constant speed and straight line) will continue to do so unless acted upon by some outside force.

2nd law

Changes in velocity (either speed or direction) are caused by forces,

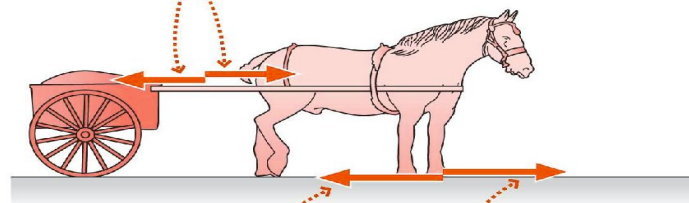
$$F=ma$$



3rd law

Forces always come in pairs (action-reaction).

These forces constitute an equal but opposite pair, but they don't act on the same object so they don't cancel.



The force on the horse arises as a reaction to the horse pushing back on the road.

The forward force from the road on the horse is greater than the backward force from the cart so the net force and hence acceleration are forward.

Iclicker Question

An object rests on a horizontal, frictionless surface. A horizontal force of magnitude F is applied. This force produces an acceleration

- A. only if F is larger than the weight of the object.
- B. only while the object suddenly changes from rest to motion.
- C. always.
- D. only if the inertia of the object decreases.
- E. only if F is increasing with time.