For your first midterm

- Don't worry (too much)!! Get enough sleep the night before.
- No notes or books allowed
- Calculator with cleared memory allowed
- You should know 2D x(t), y(t), circular motion results, Newton's 2nd law, by heart (will not be given)
- Will give 1D constant accel equations of motion (just like in the practice exam)

- **Survey question : are you using TA discussion sessions (or MSI) to your benefit?**

A. Yes

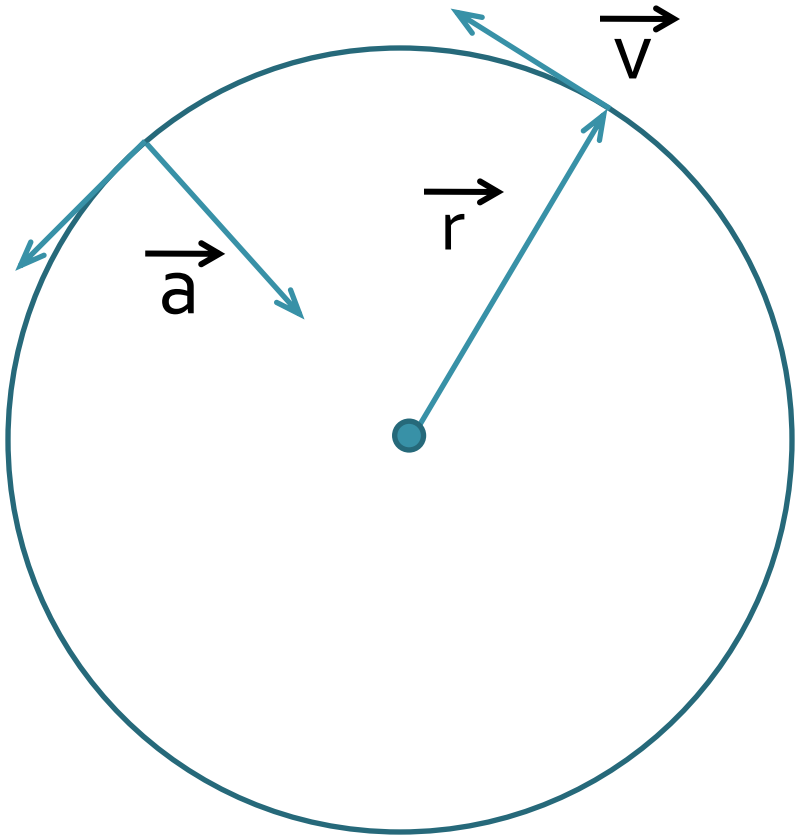
B. No, because of my schedules

C. No, because I don't understand TA

Super Important

For a uniform circular motion:

- $v = \omega r$
- $a = v \omega$
- $\omega = 2\pi/T$

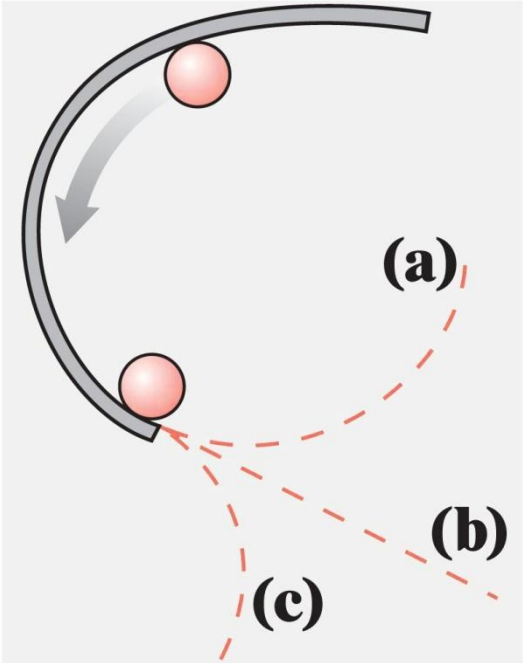


$r = |\vec{r}|$

$v = |\vec{v}|$

$a = |\vec{a}|$

- On a **horizontal** tabletop is a curved barrier that exerts a force on a ball, guiding its motion in a circular path as shown. After the ball leaves the barrier, which of the dashed paths shown does it follow?



- **In Newtonian mechanics, which one is more important concept? (i.e. which one is defined first)**

[no score reduction for an incorrect ans.]

A. Force

B. Motion

- **Which one is more fundamental than the other?**

[no score reduction for an incorrect ans.]

A. Mass

B. Weight

Mass and weight

- Weight is force and mass is … mass
- **Mass** = **intrinsic** quantity, related to how many fundamental particles make the stuff up
- **Weight** = mass x gravitational acceleration

  Force dependent on where you are.

Force

- Long-range and short-range force
- In this course, the only long-range force to consider is gravitational force
- **All other forces (tension, normal force, …) are short-range forces.**
- **Rule of thumb: no contact, no force (except gravity)**

- In other courses, other long-range (electro-magnetic) forces are considered, but let us not worry about them in this course.

- **You hit an ice hockey puck on a horizontal surface. The ice is very smooth, and so we ignore the frictional force. Right after the puck leaves your hockey stick, it will …**

A. Accelerate a bit and then slow down
B. Keep Accelerating
C. Move at a constant velocity
D. Decelerate
E. Move at a constant velocity and accelerate

- **You are measuring your weight on a spring scale in an elevator. The elevator goes up. Initially, the elevator accelerates, then moves at a constant velocity, and then decelerates. Compared to your normal weight, would your measured weight be more or less or same for these three cases?**

A. Same, Same, Same
B. More, Same, Less
C. Less, Same, Greater
D. More, More, More
E. Less, Less, Less