

# Porsche Club of America - Chicago Region Ladies' Day Driver's Education

Event AM Session

**DRIVEN  
WOMEN**

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# Questions?



# Important Rules



Share with you

go



**BLACK FLAG**  
**SAFETY INFRACTION!**



**RED FLAG**

**PASSING!**

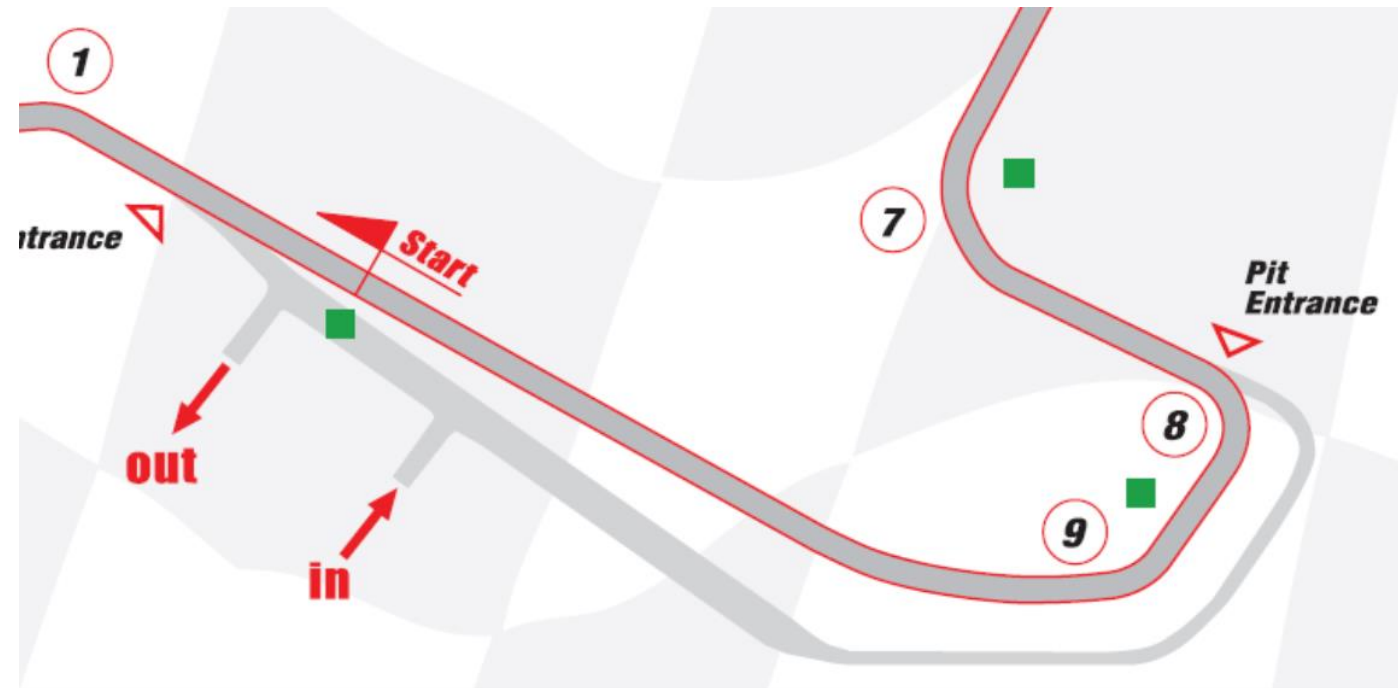
**LAST LAP!**

**FINISH LINE!**

# Entering and Exiting the Track



- **Entering the False Grid**
  - **ENTER** the track to the right of Race Control
  - **STOP** before entering the track surface
    - Belts, helmet, gloves, already on.
    - **BE READY, LOOK RIGHT**
  - **THEN** proceed onto the hot pit lane
  - Stay on the **RIGHT SIDE** against the barrier
    - Cars exiting the track will be passing you **ON YOUR LEFT**
  - Stop at the starter stand to show your wrist band
- **Entering the Track**
  - **DO NOT CROSS THE BLEND LINE!**
  - Stay to the left ALL the way through Turn 1
- **Exiting the Track**
  - Fist Up, and exit at Turn 8
  - Exit at the **END** of hot pit lane, on the left side
  - Watch out for cars entering the track



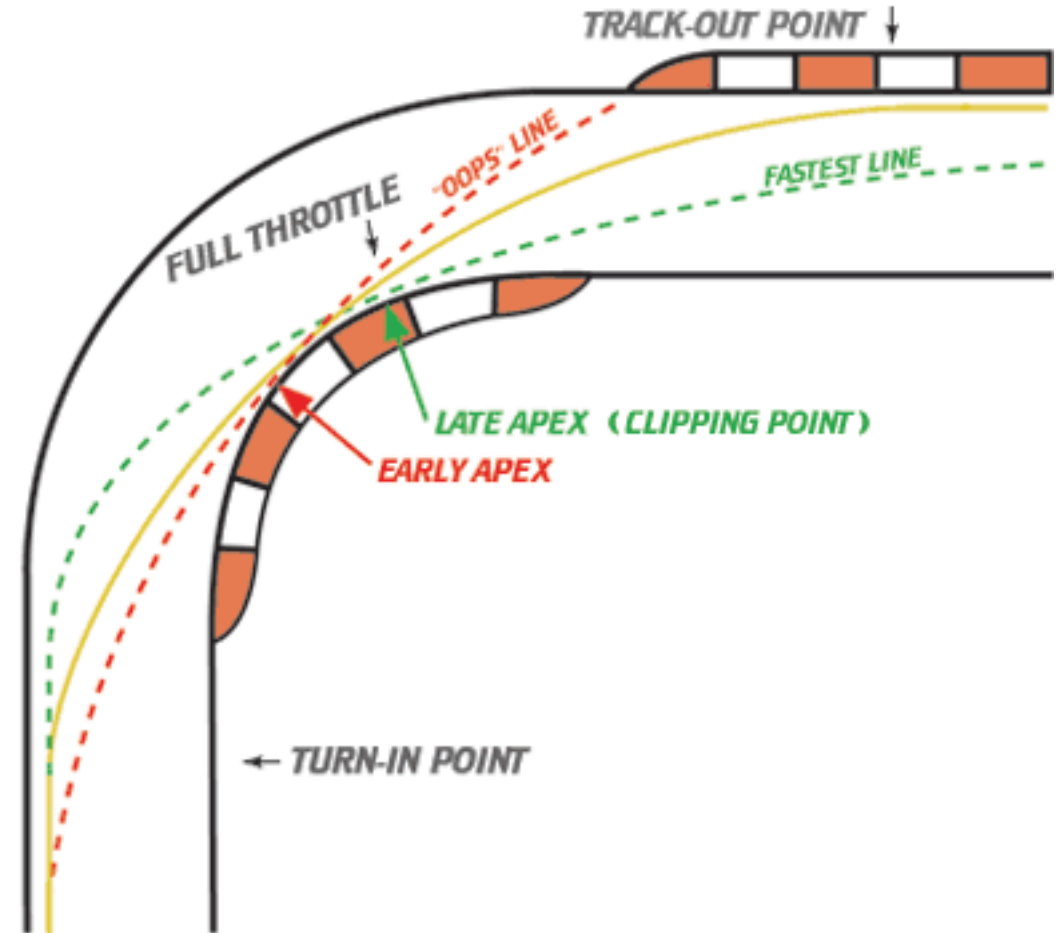
# Terminology



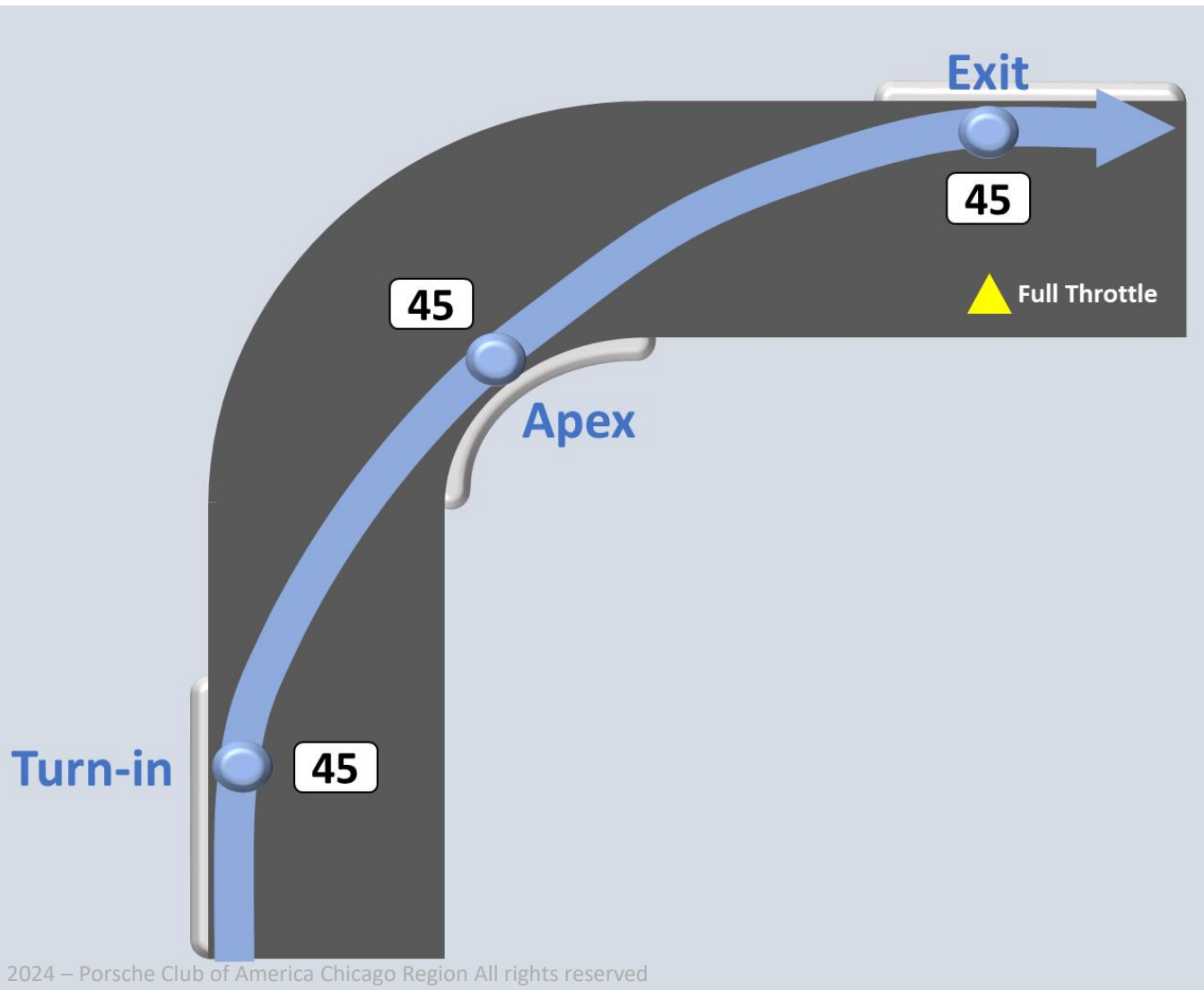
- **Turn-in Point:** the point at which you start turning the steering wheel to start your turn
- **Apex:** the point at which you will “touch” the inside of the turn
- **Track-out Point:** the point at which you reach the outside of the track after hitting the apex

For reference points, use:

- curbs (apex, exit)
- brake markers
- marks on/near the track
- pavement patches
- bumps and dips of the track
- objects in the distance



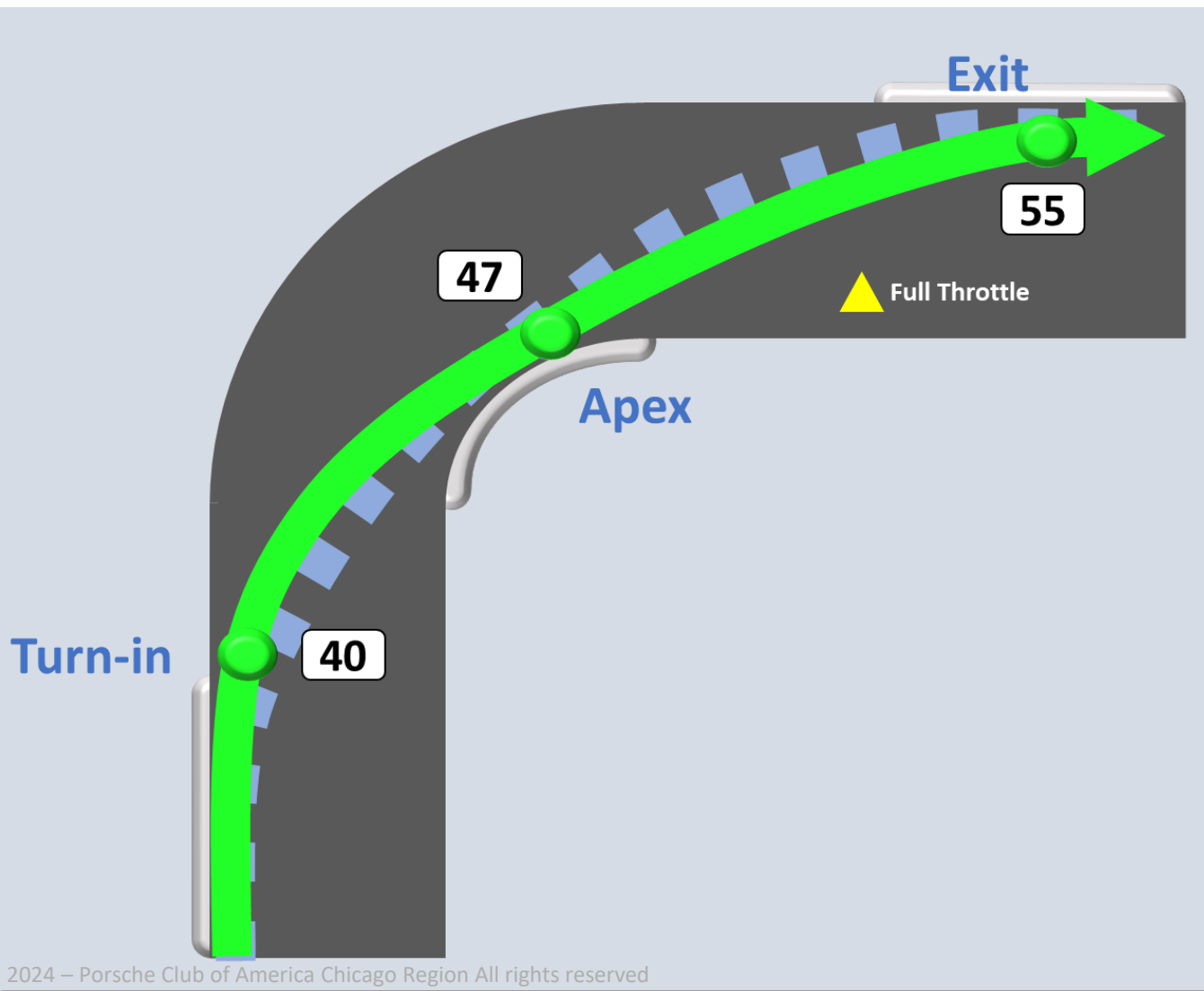
# Speed Determines Radius



The largest radius is NOT necessarily the best line

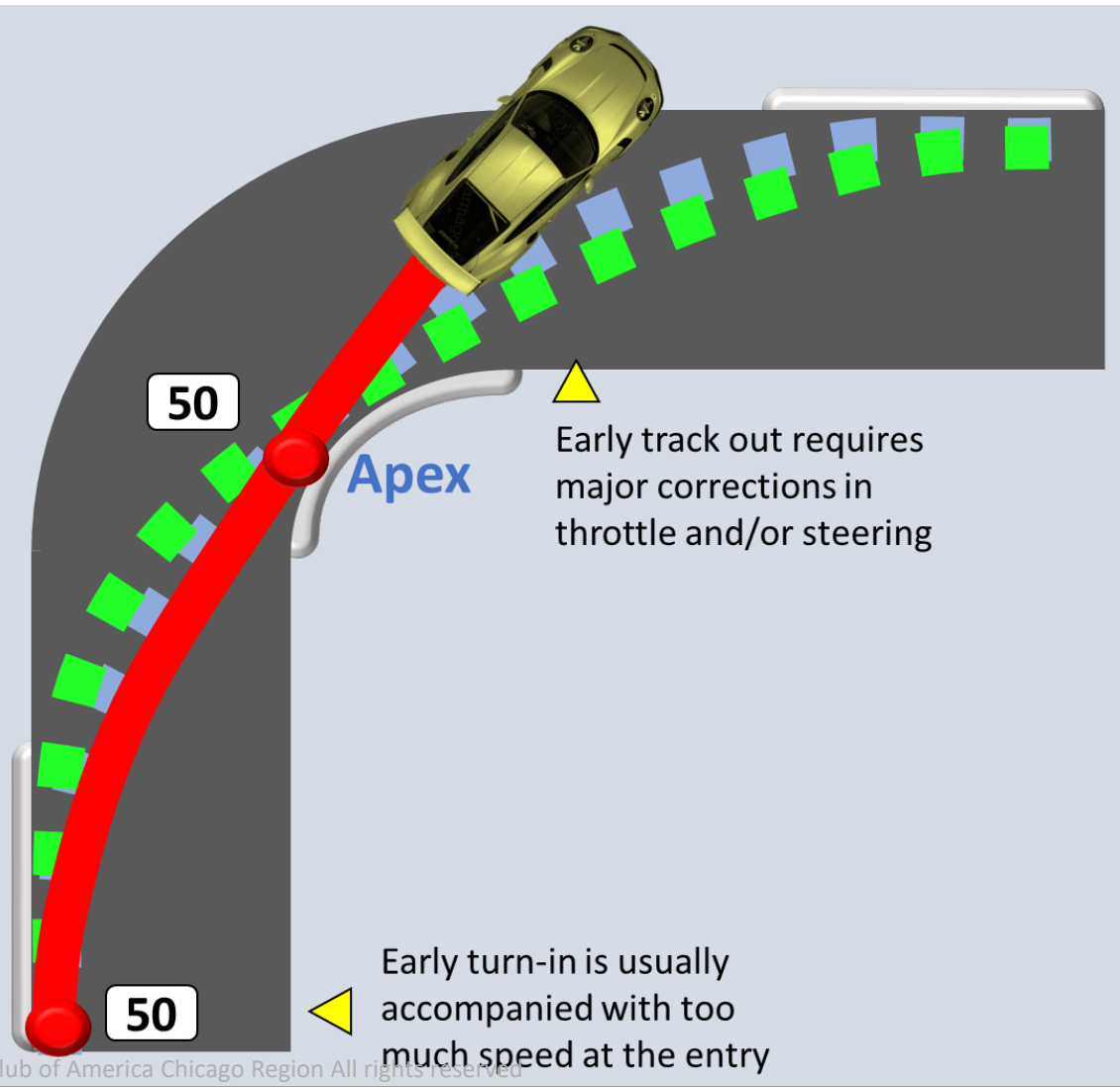
- Largest possible radius = fast through the turn
- But, you **Can't accelerate** until **after** the turn is completed

# Late Apex



- Late turn-in gives smaller initial radius, later apex
- Increasing radius allows **earlier acceleration**
- **Faster** at the track-out
- **Safer**: if you miss the apex, delay acceleration
- If it is hard to get to the apex or you don't use all the track on exit, you probably turned too late
- Too Late is MUCH better than Too Early!

# Early Apex



- You have to tighten the wheel to stay on the track
- Reduce speed gradually: “breathe out of the throttle”
- Slower speed permits tighter radius near exit

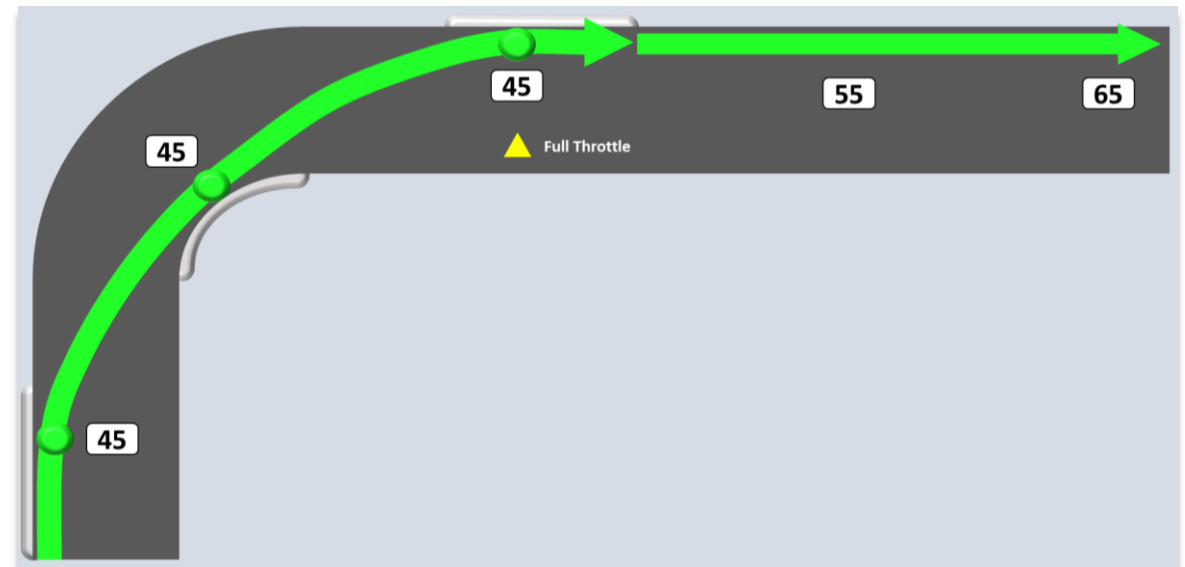


# Why a Late Apex Is Faster

Late Apex line

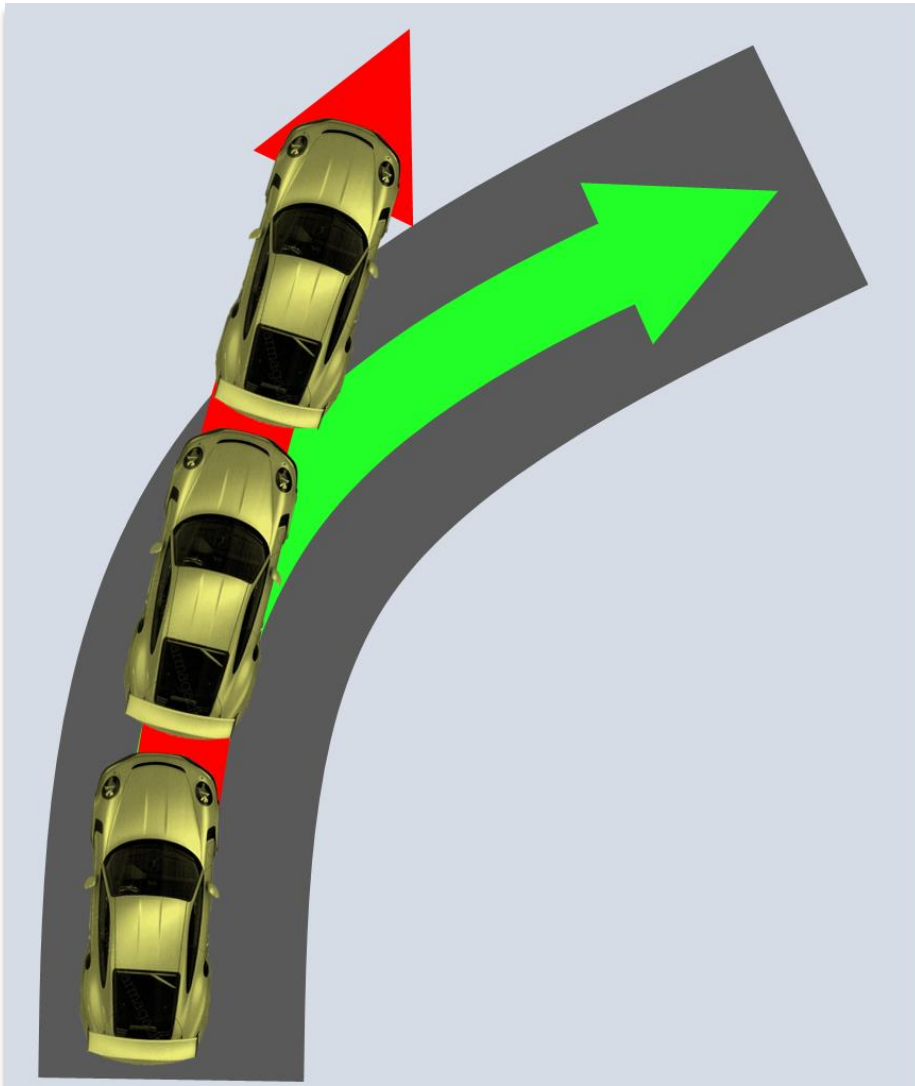


Constant Radius line



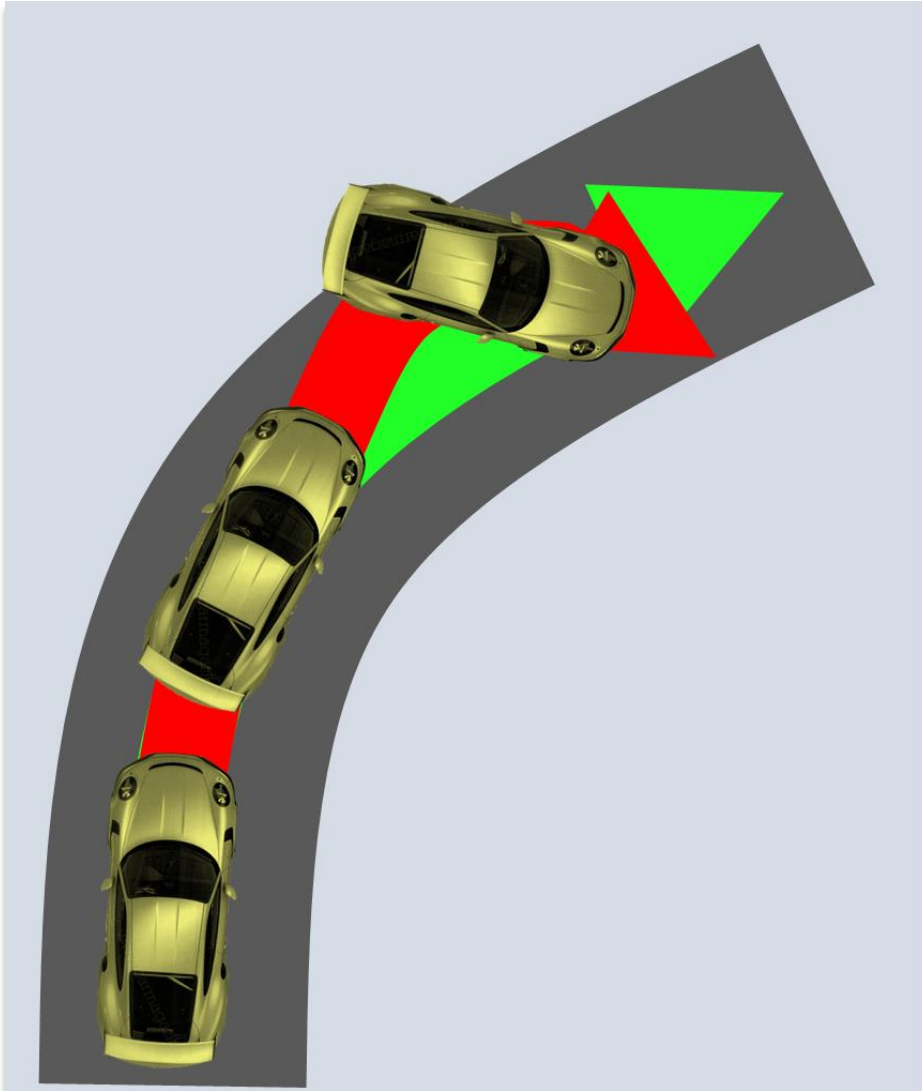
A late apex line is faster all the way to the next corner

# Understeer



- Causes
  - Improper weight management
    - Too fast corner entry
    - Abrupt or early throttle
  - Too much braking or throttle
- Corrections
  - Slow to proper speed
  - Reduce throttle to transfer weight forward
  - Ease brake pressure to allow more grip for turning

# Oversteer



- Causes
  - Excessive throttle
  - Trailing throttle oversteer
  - Improper trail braking
  - Mismatched downshift
- Corrections
  - Smoothly manage throttle
  - Ease brake pressure or gently increase throttle to transfer weight rearward
  - Wait to downshift as late as possible

**If you can't recover, brake hard!**

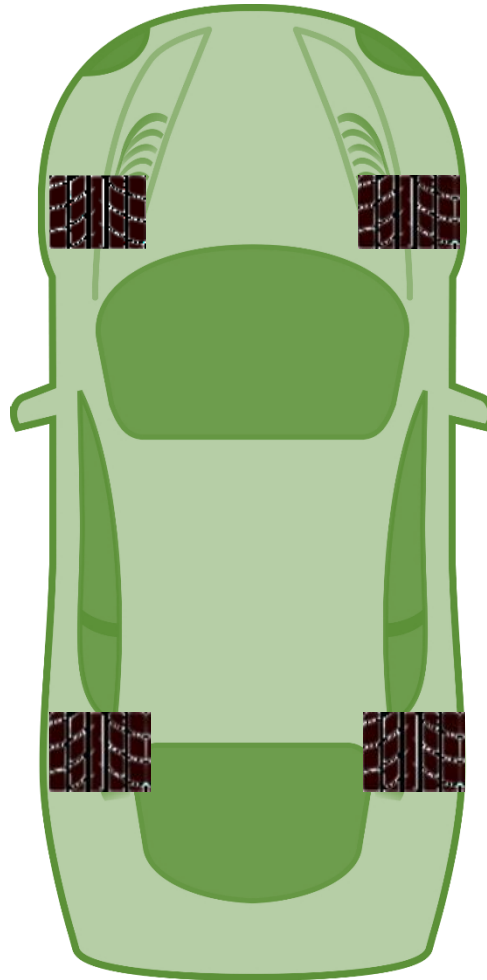
# Weight Management



Your tire's contact patch provides all the grip your car has.

Smoothly managing the transfer of weight is key to controlling your car at speed.

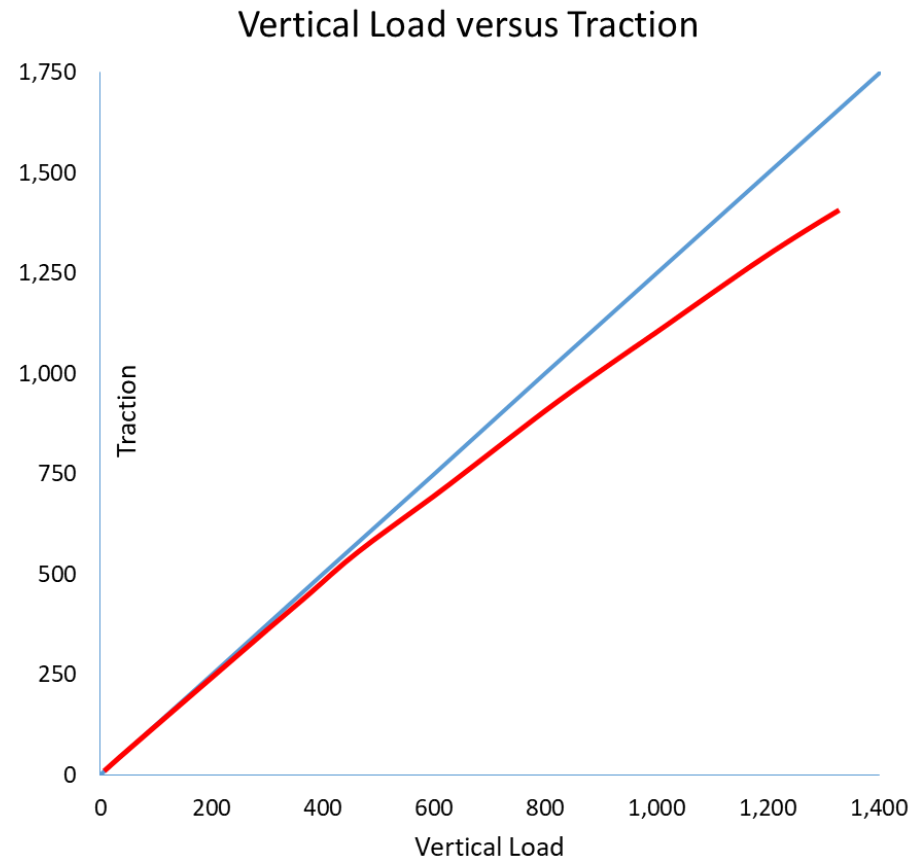
Subtle changes in weight distribution can make big changes in how your car behaves.



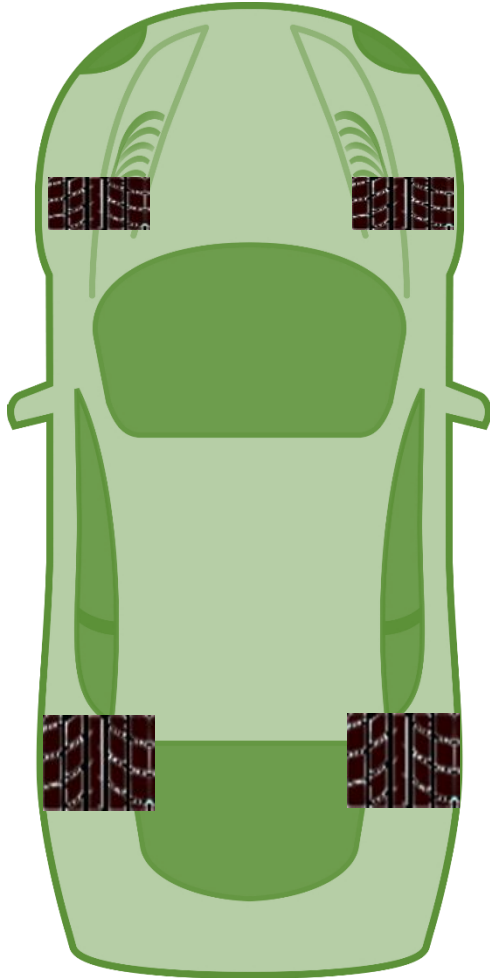
# Weight Management



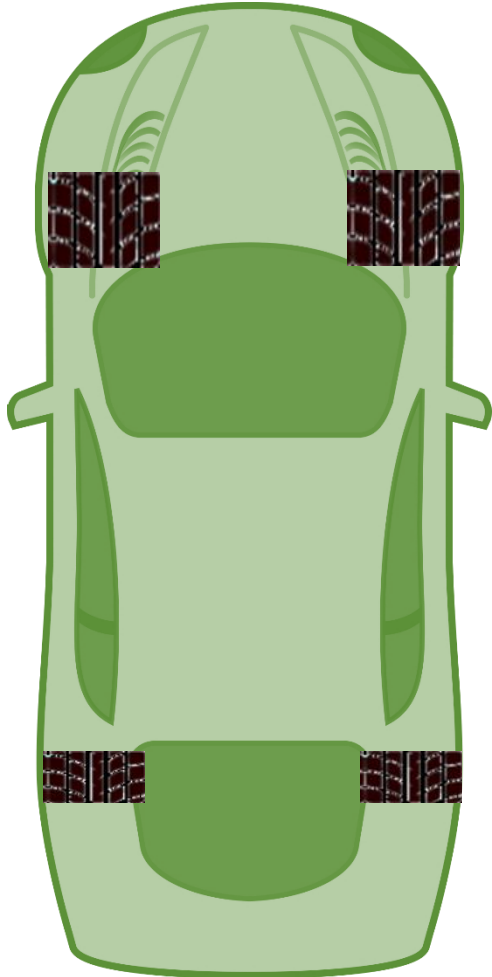
- Traction does not increase linearly with vertical load
- The total weight of your car does not change
- This means that the overall contact patch (net traction) is always less than steady state
- The goal is to smoothly manage the weight transfer and by as little as possible



# Weight Management: Acceleration



# Weight Management: Braking

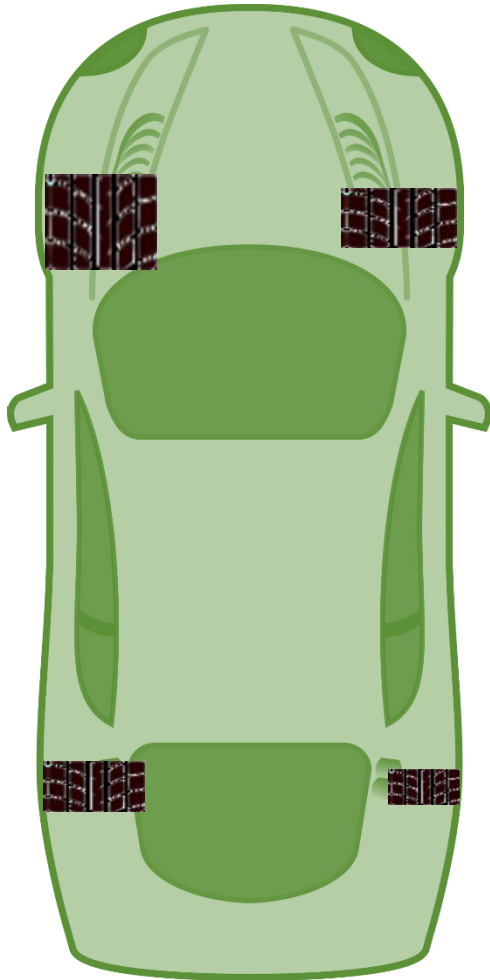


# Weight Management: Turning





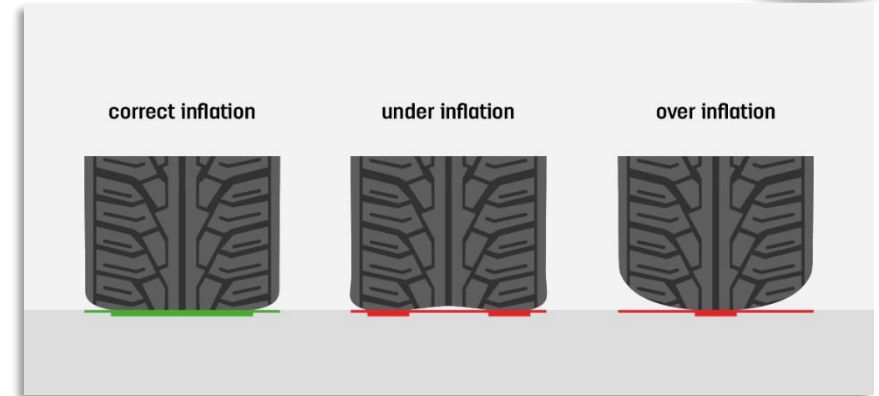
# Weight Management: Brake and Turn



# Tire Pressures



- Driving on a race track causes your tires to heat up and increases the pressure in the tires, ultimately reducing grip
- Managing tire pressure is something you will need to learn to do
- Each car is different and car setup can change the optimal pressure
- Lacking specific information from the tire manufacturer, use the pressures from the driver-side door as your target hot pressures
- When you get off the track, immediately check the pressures and reduce them to those values
- Keep track of how much you have removed so next time you can start the day by taking that much out
- Remember to put air back in before you leave



TIRE AND LOADING INFORMATION		RENSEIGNEMENTS SUR LES PNEUS ET LE CHARGEMENT	
SEATING CAPACITY TOTAL	2	FRONT AVANT	2
NOMBRE DE PLACES TOTAL	2	REAR ARRIERE	-
The combined weight of occupants and cargo should never exceed 280 kg or 616 lbs Le poids total des occupants et du chargement ne doit jamais dépasser 280 kg ou 616 lbs			
TIRE PNEU	SIZE DIMENSIONS	COLD TIRE PRESSURE PRESSION PNEU A FROID	
FRONT AVANT	245/35 ZR19	200 kPa	29 PSI
REAR ARRIERE	325/30 ZR19	230 kPa	33 PSI
SPARE DE SECOURS	none	---	

SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION  
VOIR LE MANUEL DE L'USAGER POUR PLUS DE RENSEIGNEMENTS

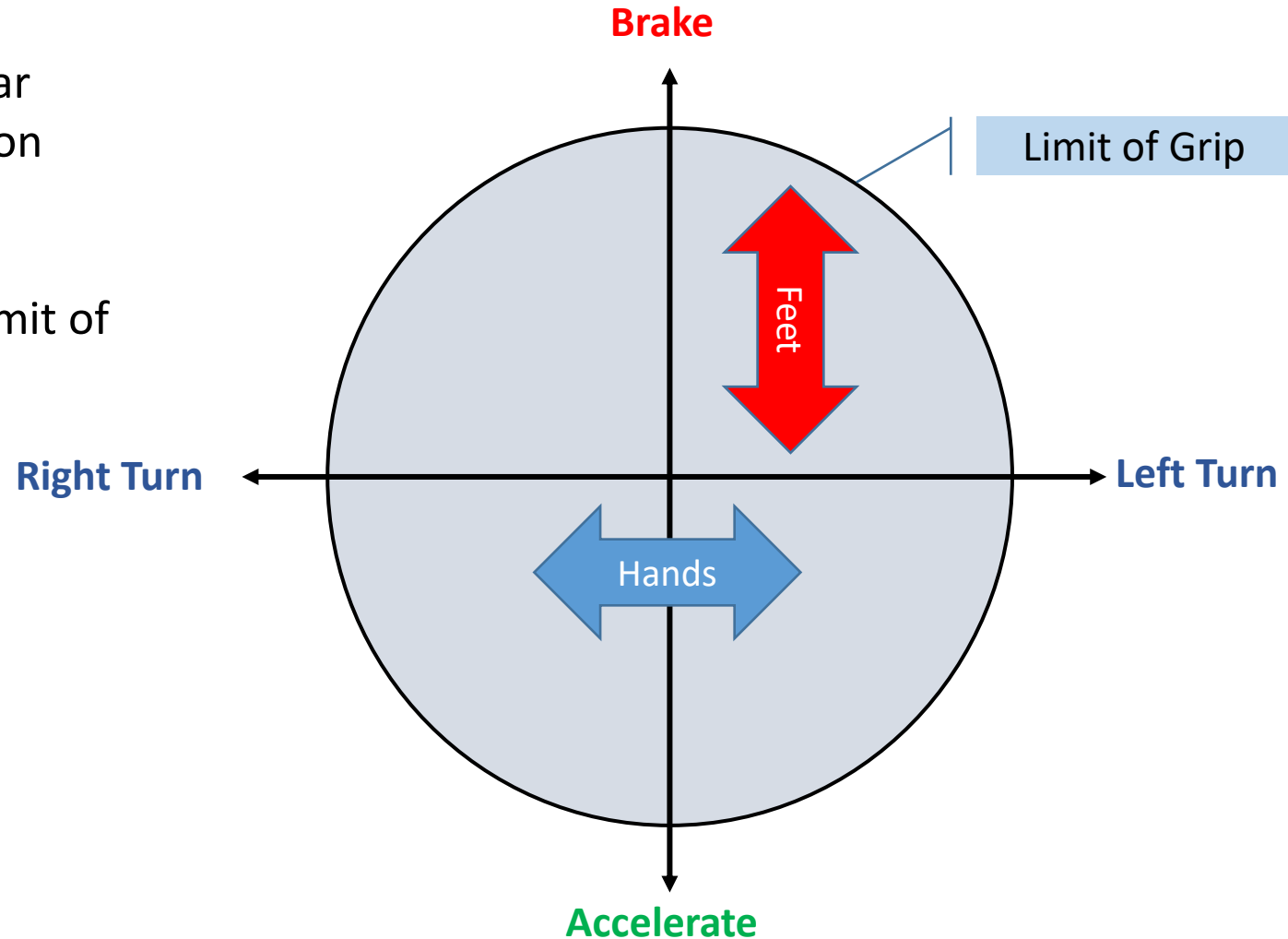
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# Friction Circle

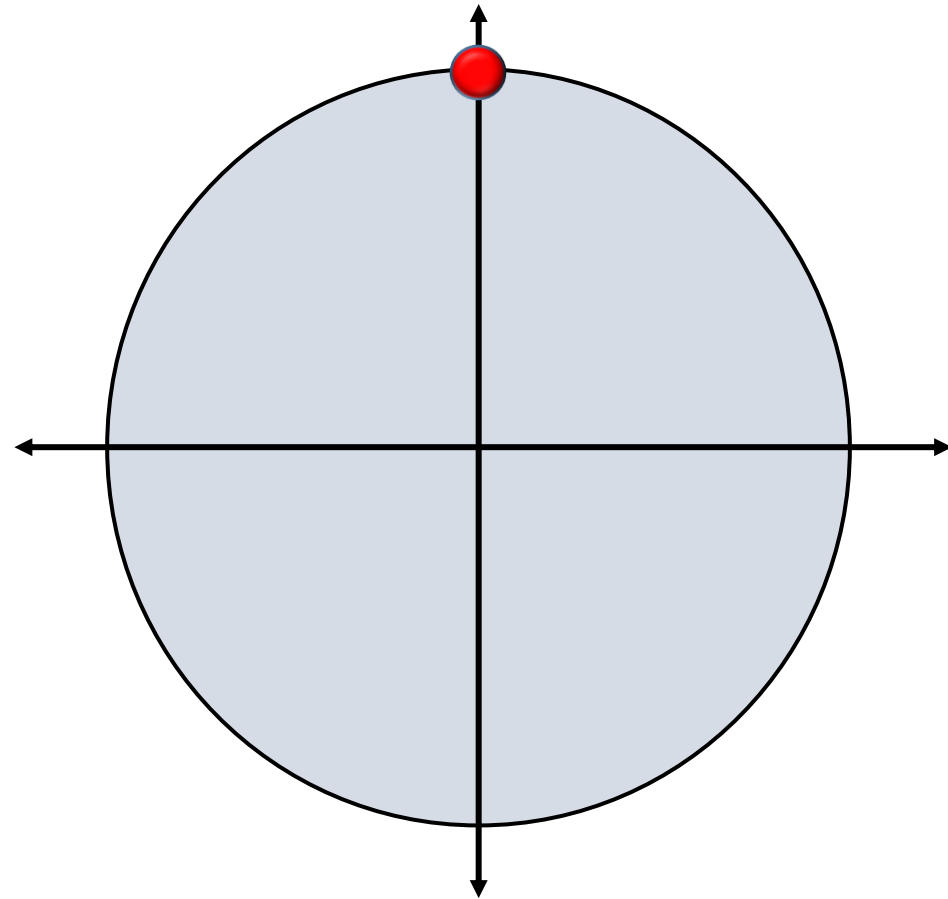
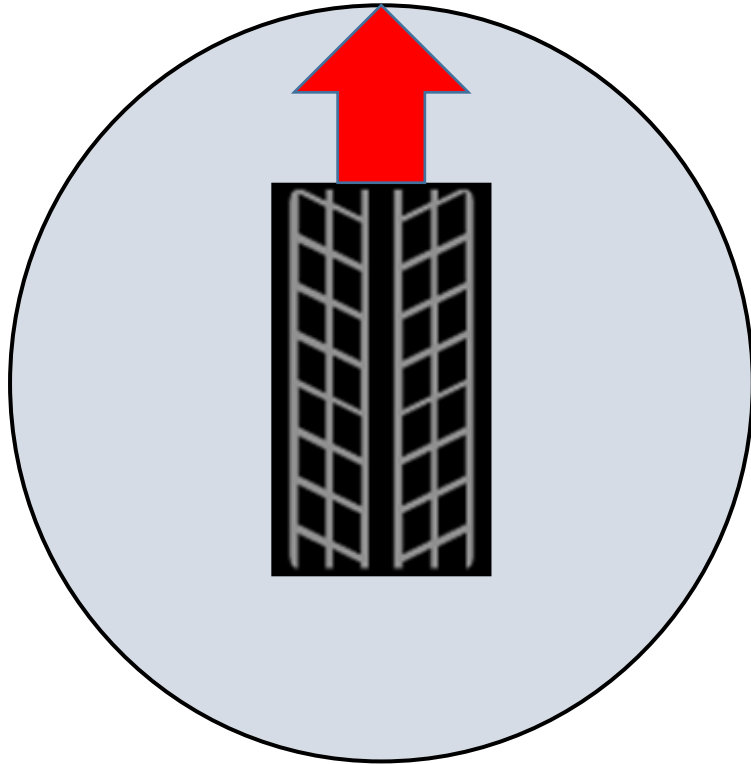


An X-Y plot of the g-forces the car experiences when being driven on a race track.

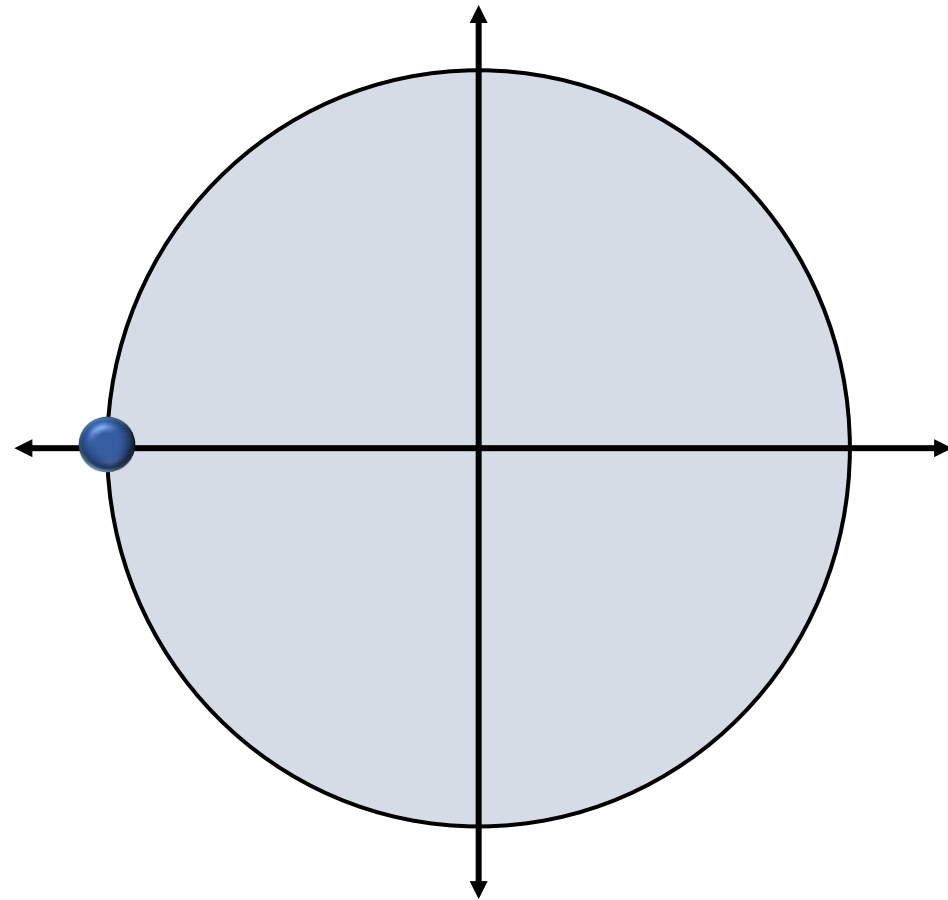
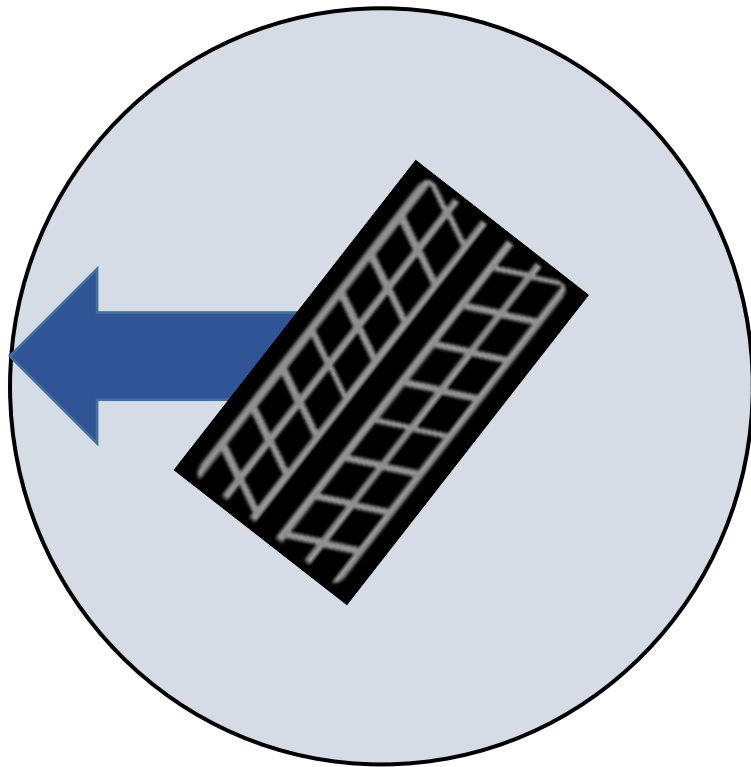
When the g-forces exceed the limit of grip, the tires will slide.



# Friction Circle: Maximum Braking

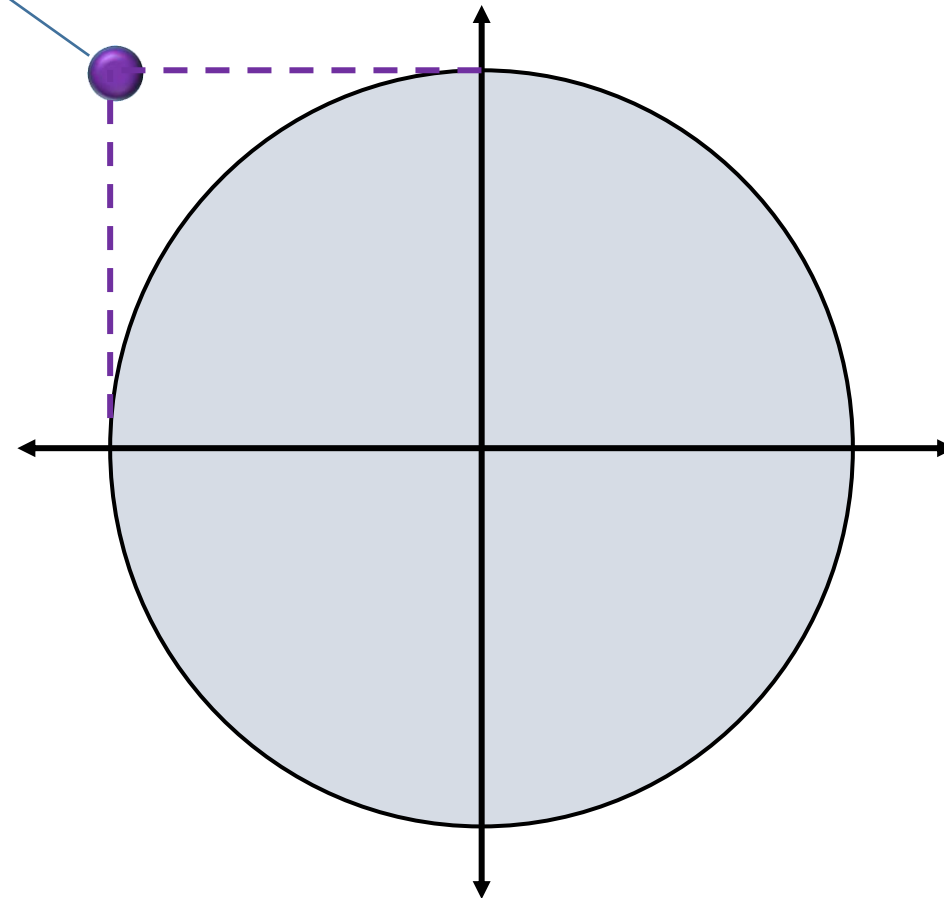
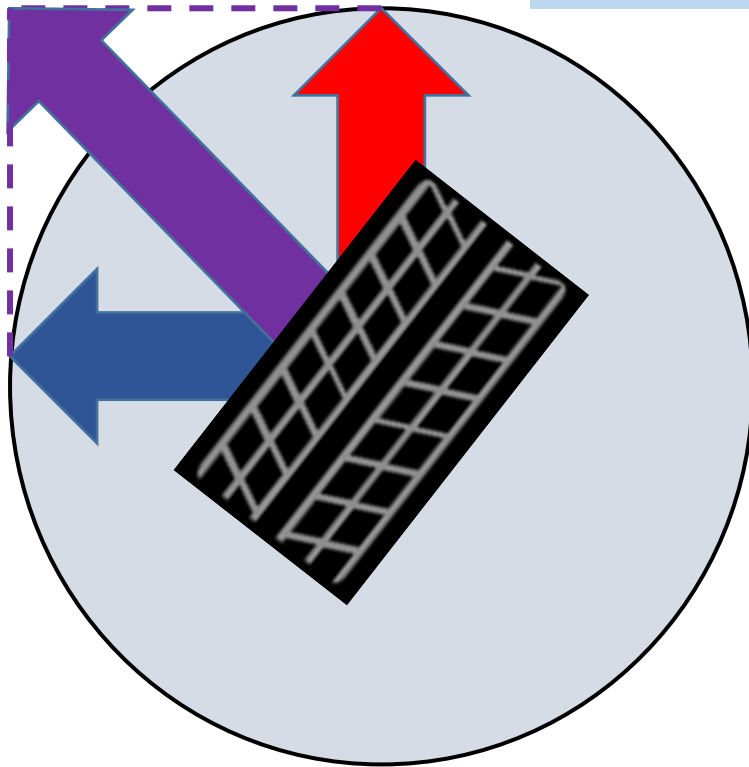


# Friction Circle: Maximum Cornering



# Friction Circle: Brake and Turn

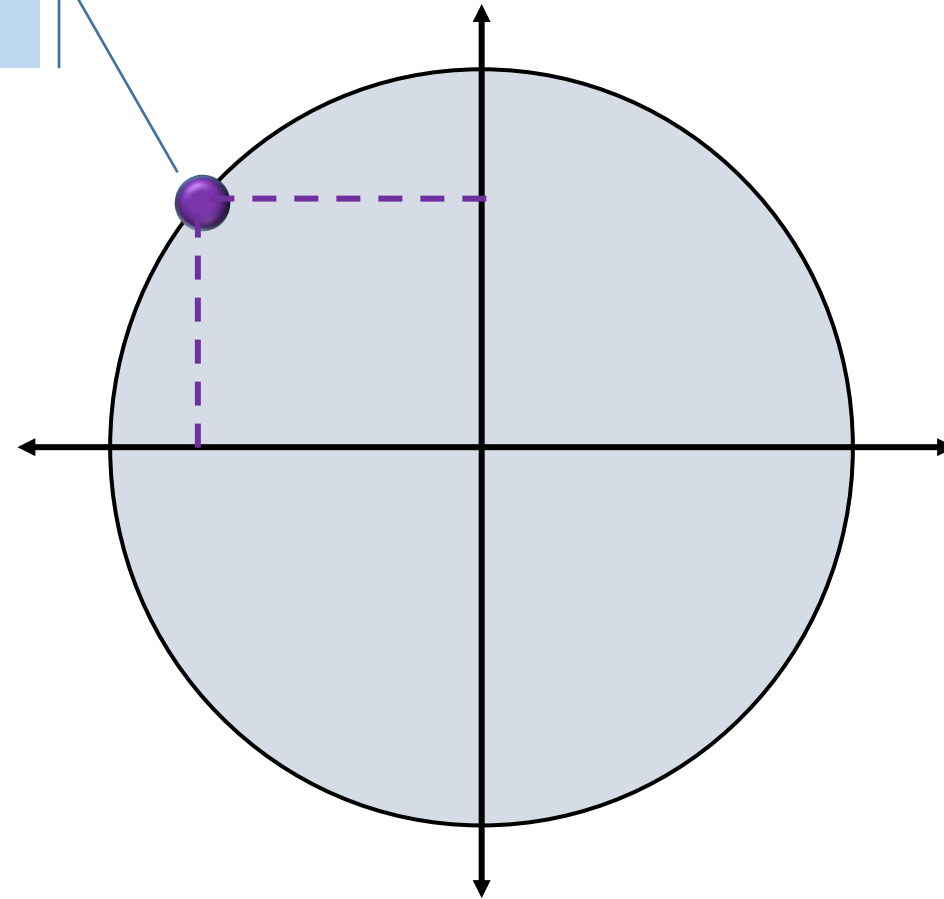
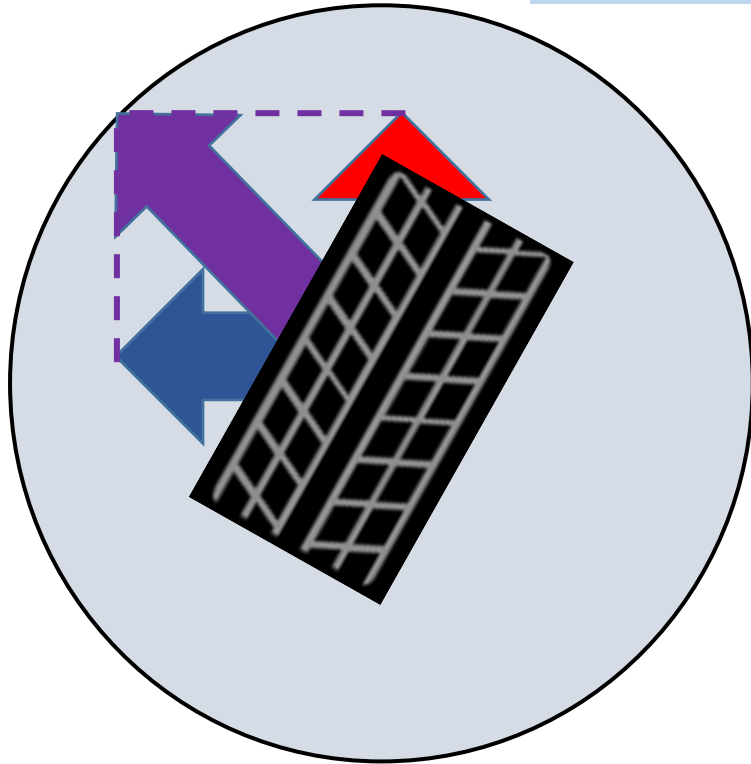
Asking the tires to do more than they can



# Friction Circle: Brake and Turn



Back off the brakes  
or back off the  
steering or both



# String Theory



Think of a string attached from the bottom of the steering wheel to the end of your shoe.

If you are turning, you must lift off of the brake or the throttle.

As you straighten the wheel, you can add Back throttle or brake.





# Braking Application



- Starting out, you will only be braking in a straight line. As you get ready for turn in, we want you to be coming off the brakes and looking through the corner.
- Eventually, we do want to extend your brake zone past the turn in point toward the apex (trail braking), but before you get there, you need to build your foundations.
- In summary, FINISH most of your braking before you turn.

# Throttle Application

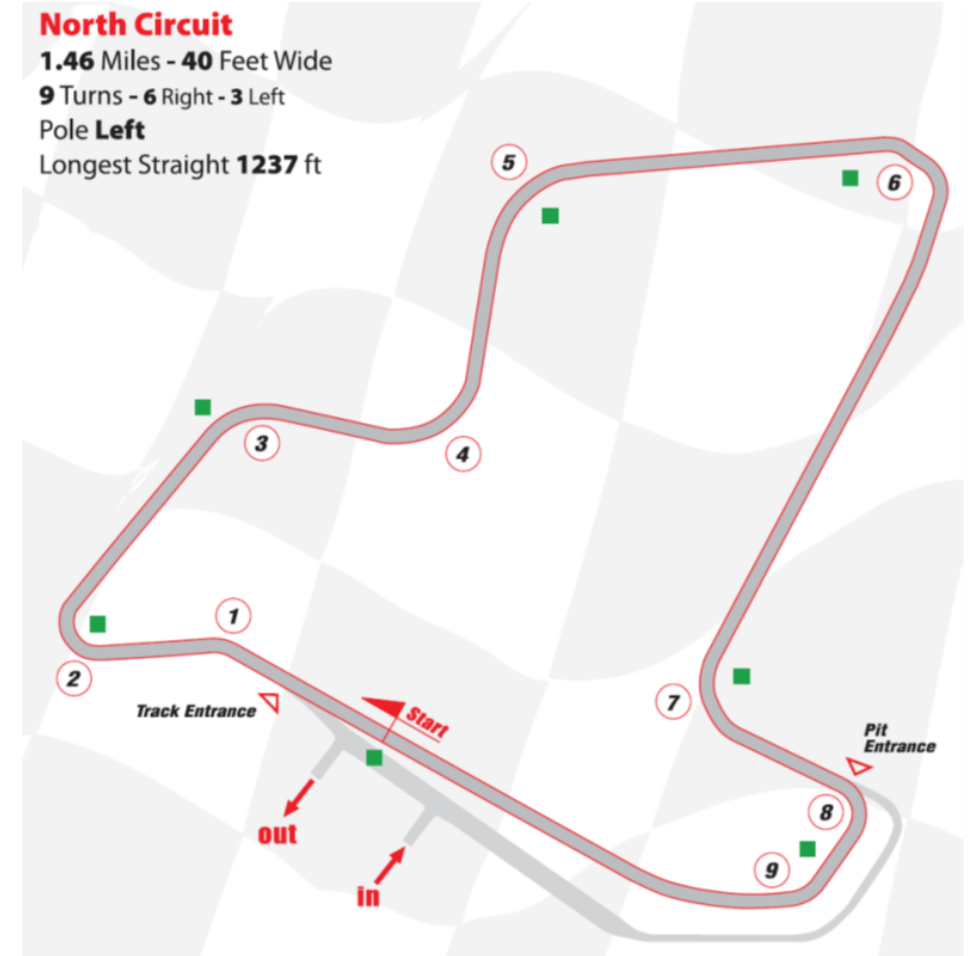


- Wait until you can start opening your hands after the apex before picking up the throttle application.
- That means that even if you feel way too slow after turning in, you will NOT use the throttle to cure the “over slowing issue.”
- You build the discipline to tell yourself, “I am not allowed to pick up the throttle until I can start to unwind the steering wheel.”
- You will correct that over slowing issue later when you are ready to focus on trail braking. That is not today.

# Suggested Focus Points



- T1? Looking at T2
- T2? Looking at entrance to T3
- T3? Look at entrance to T4
- T4? Look at track out
- T5? Look for corner station at 6
- T6? Turn 7 corner station. Turn 6 is a decreasing radius turn. Turn in Late!
- T7? Look at building with white porch
- T8? Look toward Turn 9 Apex
- T9? Look toward Race Control



# Goals for Your Next Two Sessions



- Session 2
  - Practice signaling a pass or making a pass when directed to keep traffic moving
  - Identify the turn-in reference point for Turn 1 (not the cone) and two other turns and mark them on your track map
  - Use more of the track's width
- Session 3
  - Identify when you turn-in early and correct the issue next time around
  - Gradually accelerate and unwind the wheel as you exit each turn
  - Add three more reference points to your track map

# Questions?



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Event PM Session

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# Agenda



- Student Questions and Comments
- Instructor comments
- Track discussion
- Upcoming Events
- Goals for final session

# Upcoming HPDE Events



- June 21 – Blackhawk Farms Raceway
- June 29 – Precision Driving School (aka Autocross School)
- July 9 – Blackhawk Farms Raceway
- July 29 – Autobahn Full Track
- August 9-11 – Gingerman
- August 30 – Sep 2 – Road America (HPDE and Club Race)
- September 28-29 – AlohaFest @ Blackhawk
- October 7 – Autobahn Full Track



# Goals for Your Final Session



- Session 4
  - Be smooth
  - Combine hard initial braking with gradual release
  - Add the remaining reference points to your track map