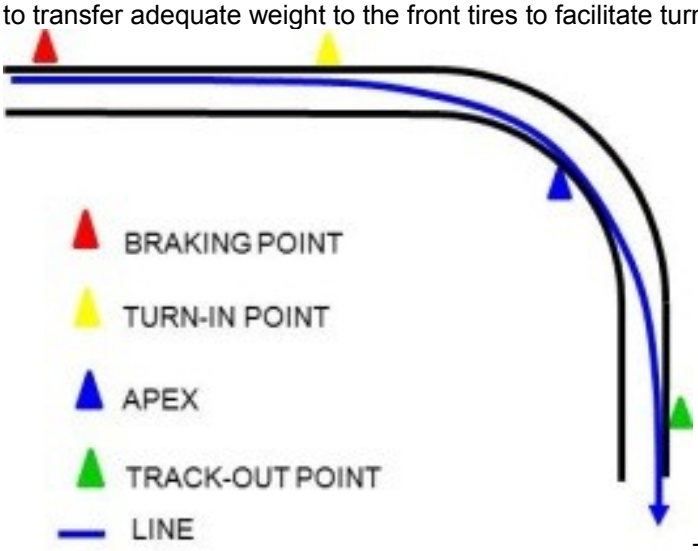
CORNERING BASICS

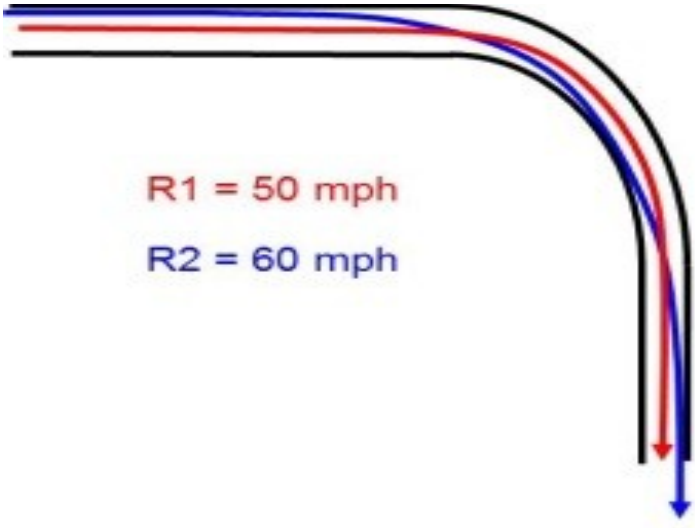
Part 1

The Line

Every good driver, whether novice or pro, follows a time-worn rule when trying to find the best way around a race track. Namely, we must establish our line before we can establish braking points or begin to employ more sophisticated driving techniques. The reason is simple… different lines yield different exit speeds, which in turn change our braking points for subsequent corners, which in turn affects our ability to achieve proper car balance at turn-in. If we enter a corner too fast, we will need to brake beyond our optimal turn-in point. If we enter a corner too slowly, we won't be braking hard enough to transfer adequate weight to the front tires to facilitate turn-in. The line must come first.



The basic anatomy of a corner is illustrated at left. The blue line shows roughly the path that we want to drive through the corner. Note that this path takes us from the outside, to the inside and back to the outside again. This path yields the largest possible radius that we can drive while remaining on the pavement. Given a decent track map, one could approximate the proper driving line using a standard compass, discounting elevation and camber changes. The need for modifying our line in compromise corners, discussed later, would be graphically emphasized in this exercise. The real challenge, of course, is identifying this optimum line from the viewpoint of the driver's seat. The better we can envision that imaginary pencil line through a corner, the better our driving will become.



So why maximize radius? Because the larger the radius we're traveling on the more speed we can maintain. As illustrated below at left, a change in radius will yield a corresponding change in exit speed. In fact, the optimum line is not a constant radius but an increasing radius, which will also be discussed later. Imagine two equally performing cars exiting a corner side by side. If one exits 1 mph faster, that car will gain 1.5 ft per second while accelerating down the ensuing straight. If that straight lasts 10 seconds, the 1 mph advantage of the faster car is worth about a car length at the end. If the speed at the end of the straight is 100 mph, the slower car will have lost 0.10 seconds to the faster car. Repeat this 1 mph difference 10 times per lap and you have a time differential of 1.0 seconds per lap. In racing, 1.0 seconds per lap is a significant margin. This illustrates something

very important. Many drivers believe that in order to lower their lap times they need to make significant changes to their line, their driving style or their car, and a great many simply determine to push harder. The latter generally makes them slower, and this is often contemplated while dust and grass rain down in their cockpit following a spin. In reality, it's very often the accumulation of very small gains - 1 mph at track out for example - that can make the most significant difference. And in order to measure these small differences we need to rely on means more accurate than our sense of how a corner "felt." In Part 2, we'll look at some strategies for evaluating our performance through a corner.