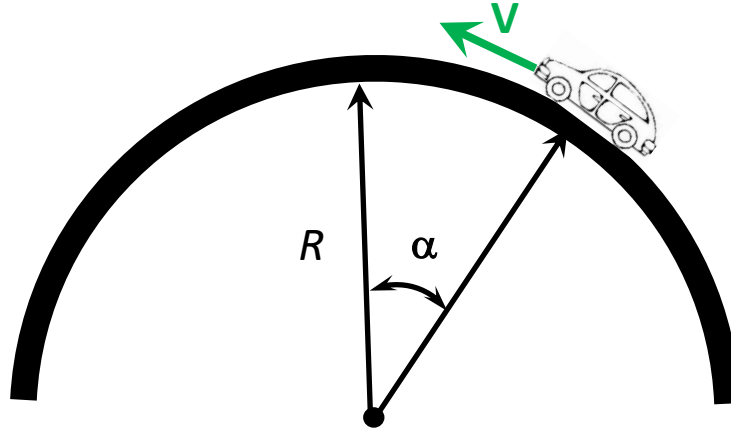


Homework 4

1. A 2000kg car is moving on a semicircle bridge with the radius of 90m. The speed of the car is 54km/h. The weight of the car in its current position is 14400N. Find the angle α between the vertical direction and the radius connecting the center of the curvature of the bridge and the position of the car (see the picture).



2. Find the minimum friction coefficient between the tires of a car and the road for the car could pass the turn with the radius of 200m at a speed of 100km/h?
3. The propeller of a plane makes 2000 revolutions per minute. The plane is moving horizontally with linear velocity of 162 km/h. Find the velocity (with respect to the Earth) of a point at the end of the propeller's blade and its path (just schematically) if total length of the propeller is 3m.