Example Problem for circular motion (with friction)

A car is going around a curved road in a horizontal arc, trying to maintain constant speed (see top view: first sketch). The road is banked (see front view, second sketch). There is friction between the rubber and the road, and the tires roll without slipping or skidding.

For now, we will consider the following as "known" quantities: m, g, μ_s, μ_k, R, and θ. ($g = 9.8$ m/s^2, $\mu_s = 0.25$, $R = 100$m, $\theta = 15°$)

Questions: To stay on the road,
A. What is the maximum speed of the car?
B. What is the minimum speed of the car?

Top view

R

v

y

θ

c