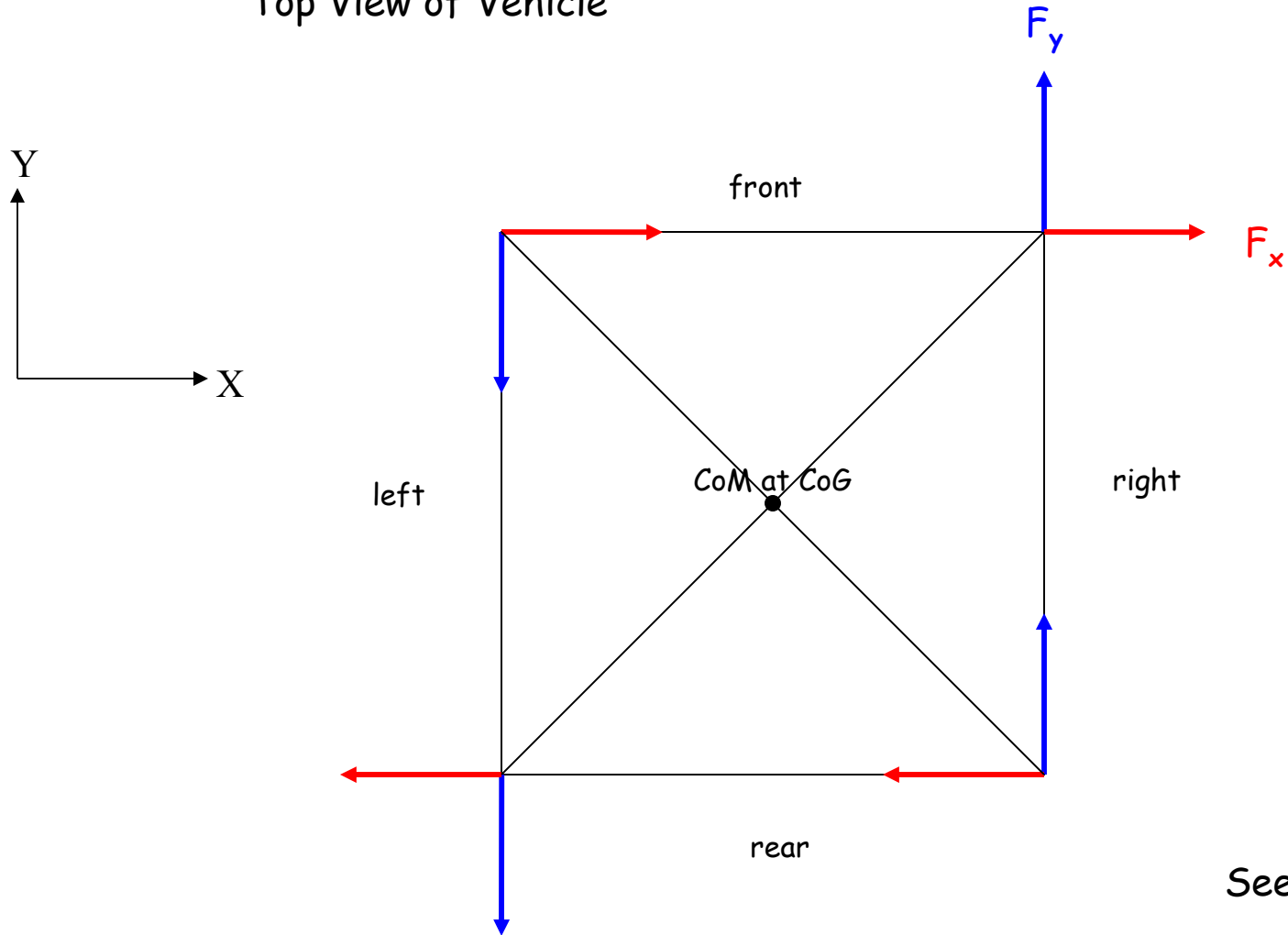


Top View of Vehicle



See Page 2



Given:

- Four identical wheels of radius " r "
- Wheels located at the corners of a square (wheelbase = trackwidth)
- Coefficient of friction μ is the same in all directions
- Same magnitude torque τ is being applied to each wheel
- Right wheels being torqued "forward"
- Left wheels being torqued "backward"
- Vehicle is in static equilibrium
- CoM is at CoG. Vehicle is on a flat, level floor. The normal force $N=W/4$ is the same at each wheel, where W is the weight of the vehicle.
- F is the total friction reaction force of the floor on the bottom of each wheel, and F_x F_y are its components

Find:

- a) F_x , F_y , and F in terms of τ and r
- b) The torque τ in terms of μ , r , and N required to break the static friction and start the vehicle rotating