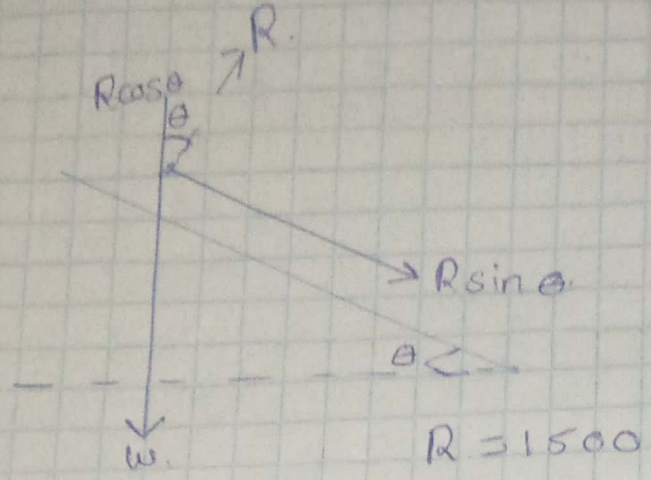
7. (a)



$R = 1500$

$m = 1500\ kg$
$r = 75\ m$
$v = 25\ m/s$

Frictional force, Fr = centripetal force

$= mg \tan\theta^\circ$

$= 1500 \times 10 \times \tan 22^\circ$

$= 6,060.39\ N$

$R\cos\theta$ - is the vertical component that is responsible for balancing the weight of the vehicle.

$\frac{R\sin\theta}{R\cos\theta} = \frac{mv^2}{r} \times \frac{1}{mg} = \tan\theta = \frac{Fr}{mg}$

$= mg\tan\theta = Fr.$

B. Co-eff of Friction $= \mu$

$F_r = \mu R.$

$mg \tan\theta = \mu mg.$

$\tan\theta = \mu$

where μ is coefficients of Friction.

$= \tan\theta. = \frac{v^2}{rg.}$

$= \frac{25 \times 25}{75 \times 10}$

$= 0.8333.$