$r = 200\,m$

$\mu_s = .8$

$m = 1000\,kg$

Force must be perpendicular and proportionate

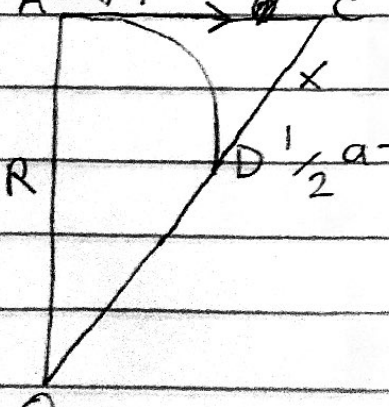
$a_c = v^2/r$ * How?

$v = \frac{2\pi r}{T}$

$a = \Delta v / t$

$a = \Delta v / 2\pi r / v$

Wrong



$R^2 + (vt)^2 = (R+x)^2$

Holy fuck I have to actually remember how to FOIL.

$R^2 + (vt)^2 = R^2 + 2Rx + x^2$

$(vt)^2 = 2Rx + x^2$

Why here?

$\lim_{t \to 0} x(2R + x) = v^2t^2$

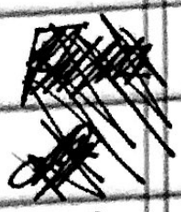
$v^2t^2 = 2xR$

$\frac{v^2t^2}{2R} = x$

↓ ?

$a = v^2/R$

Basically look at this as the sum of two vectors $A \to C$ and C



what's required

$$\frac{v^2}{r} = a_c$$

$$F_{Friction} = ma$$

$$F_{Friction} = 1000 * 9.8$$
$$= 9800\ N * \mu_s$$
$$= 7840\ N$$

↑

Max force tires could withstand

$$7840 = 1000\, a_c$$

$$7840 = 1000 \frac{v^2}{200}$$

$$v = 39\ m$$

$$v = 40\ m/s$$