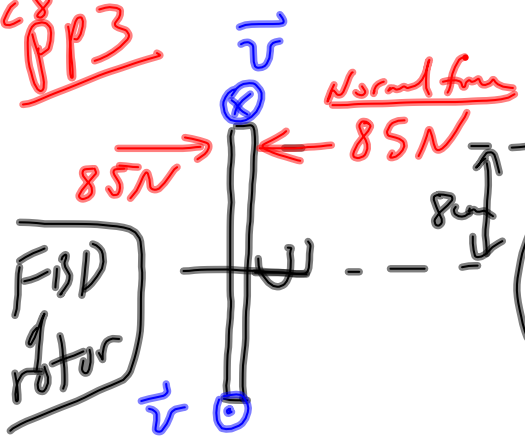


8 pp3



$$\tau = F r_{\perp}$$

$$\tau = f \cdot r_{\perp} \cdot 2$$

$$f = \mu N$$

$$= .62(85N)$$

$$= 52.7N$$

$$= 2(52.7N)(.08m)$$

$$= 8.43 \text{ N}\cdot\text{m}$$

(Not J)

$$\mu = .62$$

$$W = F \Delta x$$

$$= F \Delta r \cos \theta$$

$$F_{nt} = \frac{N \Delta L}{m} \Delta a$$

$$W_{nt} = \Delta K$$

$$W_{nc} = \Delta E$$

work done by brake pads < 0

so that it can stop # rotations of rotor

$$W_{\text{brake pads}} = -f \cdot 2\pi r N \sim \text{losing energy to heat}$$

$$\frac{1}{2} (30 \text{ m/s})^2 (1500 \text{ kg}) = 675 \text{ kJ} = K$$

$$E = K + U_g + U_s$$

$$W_{nt} = \Delta K$$

$$W_{nc} = \Delta E = \Delta K$$

$$\left. \begin{array}{l} W_{nt} = \Delta K \\ W_{nc} = \Delta E = \Delta K \end{array} \right\} = K_f - K_i = 0 - 675 \text{ kJ}$$

$$-f 2\pi r N = -675 \text{ kJ}$$

$$= -(105N) 2\pi (.08m) N = -675 \text{ kJ}$$

$$\Rightarrow N = 12800 \text{ rotations}$$

Wheel 62 cm dia, $\text{circum} = 2\pi r = \pi d = 195 \text{ cm}$
 $= 1.95 \text{ m}$
 rotations

$$25000 \text{ m} = 25 \text{ km}$$