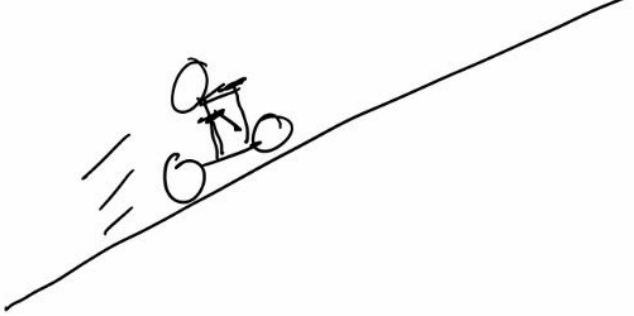


$$\text{Power} = \frac{\text{F} \cdot \text{Displacement}}{\text{time}}$$

$$\text{time} = 300$$

$$30 \cdot 725\text{W} = \frac{W}{t}$$

$$21{,}750\text{ J} = W$$

$$21{,}750 = \text{Force} \cdot \text{displacement}$$

---

a)

$$725\text{W} = 85\text{kg} \cdot 9.8\ \tfrac{\text{m}}{\text{s}^2} \cdot u \sin\theta$$

$$\theta = 10^\circ$$

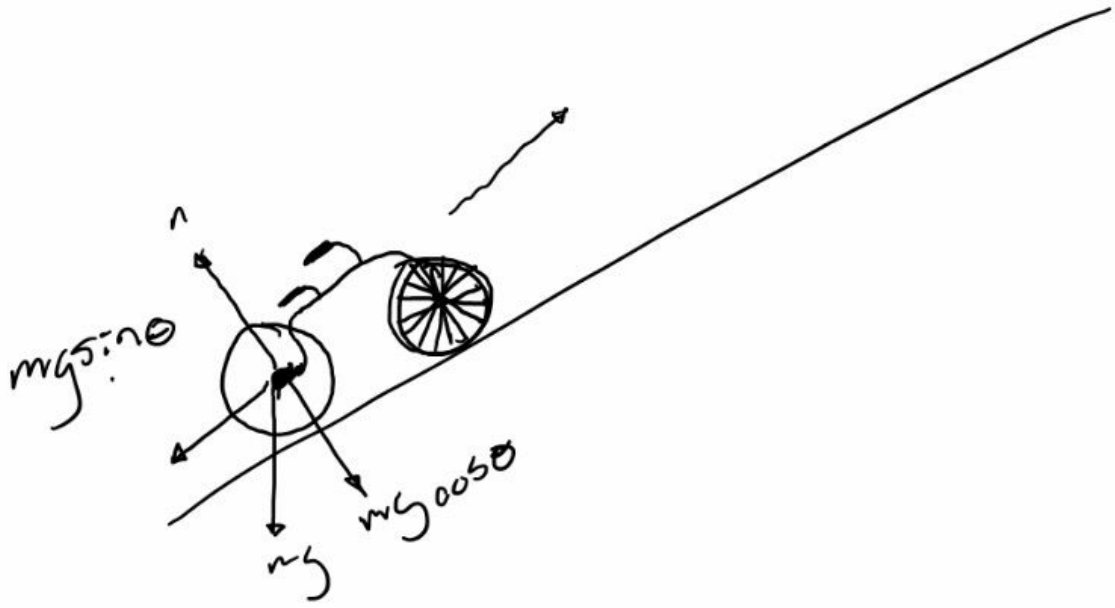
$$\sqrt{90^2 + 500^2} = 508.04\text{ft} \approx 154.85$$

$$\frac{725\text{ W}}{\sin(10) \cdot 9.8\ \tfrac{\text{m}}{\text{s}^2} \cdot 85\text{ kg}}$$

$$u = 5.01\text{ m/s}$$

$$\frac{154.85\text{ m}}{5.01\text{ m/s}} = 30.9\text{ seconds}$$

b)



torque & angular spd needed.

$85kg \cdot 9.8 \frac{m}{s^2} \sin(10) = 144.65N$

$0.325 \cdot 144.65 \quad N = \frac{\tau}{0.325m} \cdot 0.325m$

$47.01 \frac{N}{m} = \tau$

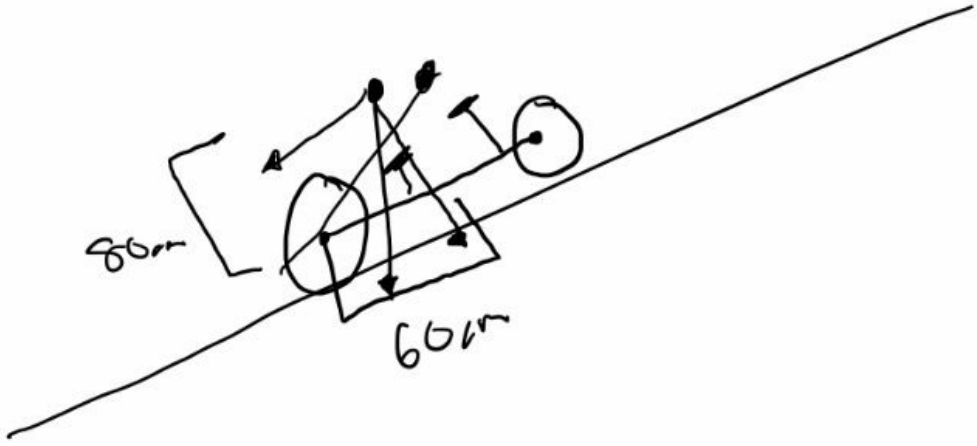
$\omega = 15.88 rad/s$

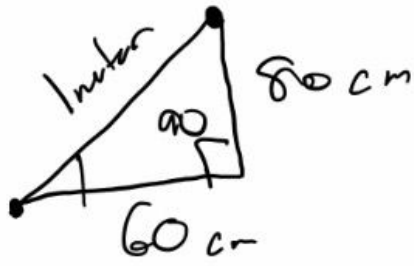
$x \cdot \frac{154.65m}{x} = 305 \cdot x$

$5.16 m/s$ needed!

$\frac{5.16 \frac{m}{s}}{0.325m}$

c)





$$\sin(x)\,\frac{1}{\sin(90)} = \frac{0.6}{\sin(x)}$$

$$\left[\frac{1}{\sin(90)}\right]$$

$$\sin^{-1}(\sin(x)) = (0.6)\sin^{-1}$$

$$53{,}13^\circ \approx 133\%$$