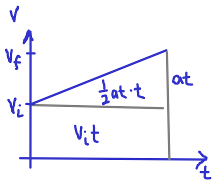
$a = \frac{v_f - v_i}{t} \Rightarrow v_f = v_i + at$

acceleration




Trap

Rect + Tri

$\underbrace{\text{Area}}$ $\triangle$ trapezium

$\underbrace{\text{meters}}$

$V = u + at$

$S = S_0 + \frac{1}{2}(v+u)t$

$S = S_0 + vt + \frac{1}{2}at^2$

$V^2 = u^2 + 2as$

$t = \frac{v_f - v_i}{a}$

Use 1 & 3 ↗ express as t

$S_f = S_i + v_i \cdot \frac{v_f - v_i}{a} + \frac{1}{2}a\left(\frac{v_f - v_i}{a}\right)^2$

$= S_i + \frac{v_i(v_f - v_i)}{a} + \frac{1}{2}\frac{(v_f - v_i)^2}{a}$

$= S_f - S_i = \frac{\cancel{2}(\cancel{v_i v_f} - v_i^2) + v_f^2 - \cancel{2v_i v_f} + \cancel{v_i^2}}{2a}$

$= \frac{v_f^2 - v_i^2}{2a}$

$v_f^2 = v_i^2 + 2a(S_f - S_i)$

$f = \mu \underbrace{n}_{mg}$

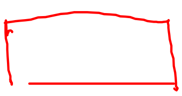
$F = ma$

$\downarrow$

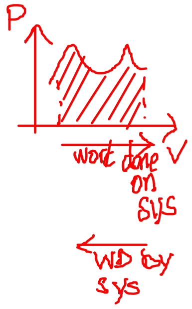
centripetal acceleration

→ lost KE

Think elastic ⇒ Bounce



$\Delta X = x \alpha X T$

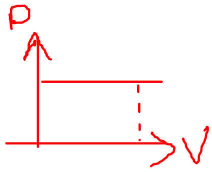



heat added → goes into system & WD on sys.

Think: c is factor for sensitivity

As t ↑ Q ↑

Independent of t




$$KE_R = \frac{1}{2} I \omega^2$$

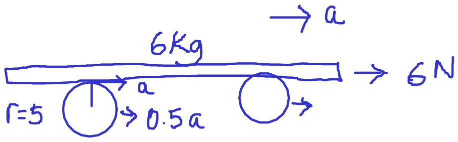
$$I = \sum m_i r^2$$

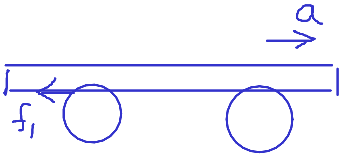
$$I = I_{cm} + md^2$$

$$\tau = I\alpha$$

$$= Fd$$

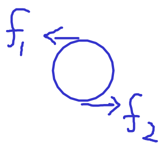
$$P = \tau\omega = \frac{\tau d}{t}$$




$F = ma$

$6a = 6 - 2f_1$ ← frictional force




$$f_2 - f_1 = 2\cdot(0.5a)$$
$$f_2 - f_1 = a$$

$$\tau = I\alpha$$
$$= f_1(0.005) + f_2(0.005) = \frac{1}{2}$$