

Newton's 3rd Law

p. 59 Horse Paradox

3rd $\vec{F}_{\text{horse/cart}} = - \vec{F}_{\text{cart/horse}}$





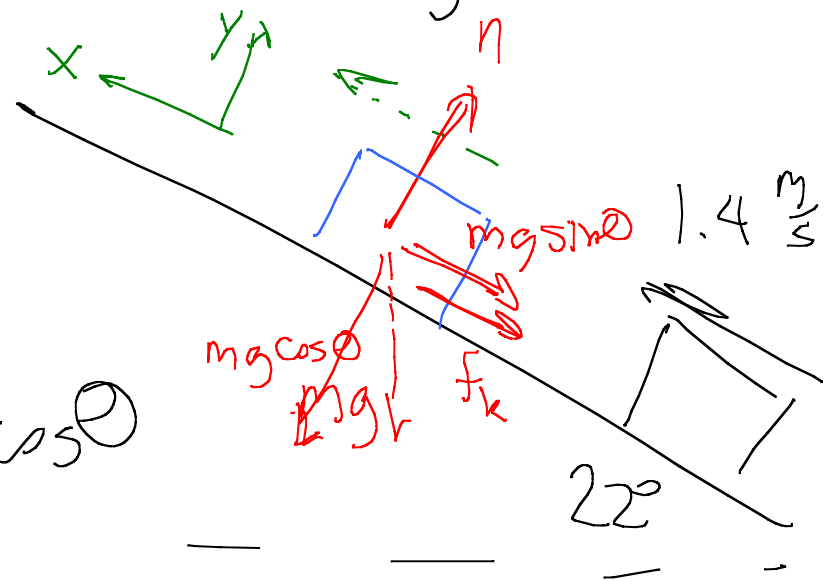
5.54) Block is shoved up 22° slope
w/ initial speed $1.4 \frac{m}{s}$
Coefficient of kinetic friction
is $0.70 = \mu_k$

a) How far up slope block go?

$$n = mg \cos \theta$$

$$f_k = \mu_k n = \mu_k mg \cos \theta$$

$$F_{net, x} = -mg \sin \theta - \mu_k mg \cos \theta$$
$$x = ma_x$$

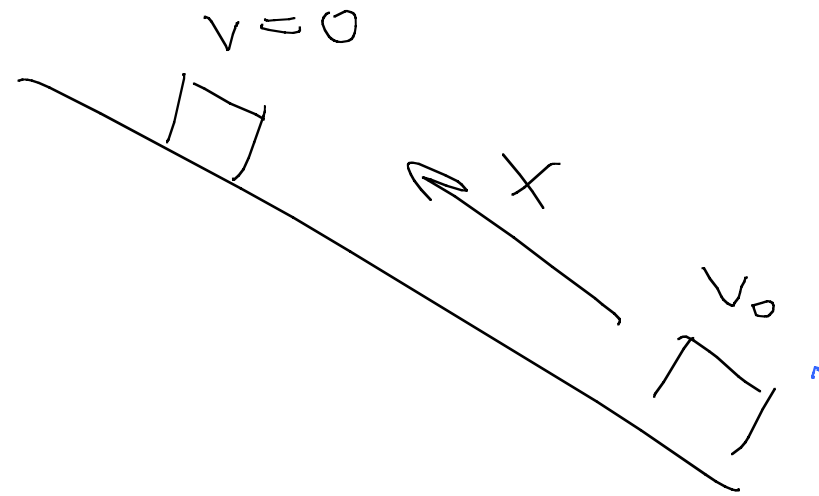


$$a_x = -10.0 \text{ m/s}^2$$

$$V_0 = 1.4 \text{ m/s} \quad V = 0$$

$$V^2 = V_0^2 + 2ax$$

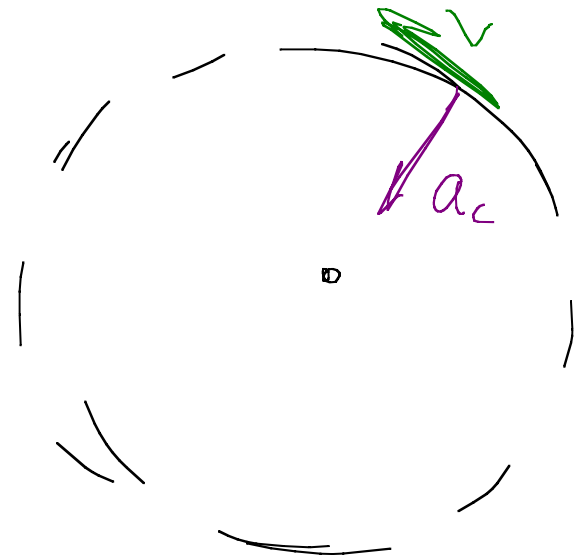
$$\rightarrow x = 9.8 \times 10^{-2} \text{ m} = 9.8 \text{ cm}$$

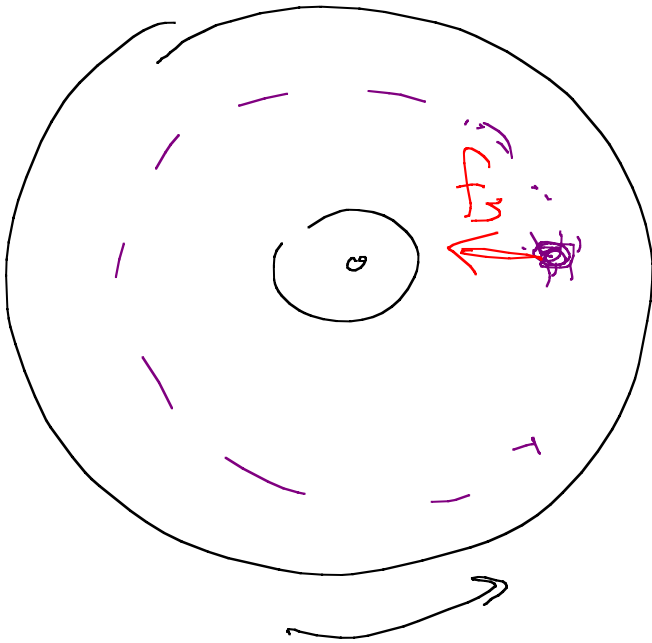


Uniform Circular Motion

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

\vec{F}_{net} must point toward center,
Magnitude = $\frac{mv^2}{r}$





33. rpm

$$F_{net} = \frac{mv^2}{r}$$

