

Hands-On Problem

(1-D Kinematics, Practice Test 2)

Data 1

$$\Delta t(\text{1st slope}) = \frac{6.4}{4} = 1.6\text{s}$$

↑ played @ 0.25 speed

$$\Delta t(\text{2nd slope}) = \frac{2.8\text{s}}{4} = 0.7\text{s}$$

really should be distance

$$\Delta x(\text{1st slope}) = 0.6\text{m}$$

$$\Delta x(\text{2nd slope}) = 0.21\text{m}$$

1st slope

$$\frac{v + v_0}{2} = \bar{v} = \frac{\Delta x}{\Delta t} \Rightarrow \frac{v}{2} = \frac{\Delta x}{\Delta t} \Rightarrow v = \frac{2\Delta x}{\Delta t} = \frac{2(0.6\text{m})}{1.6\text{s}} = 0.75\text{m/s}$$

$$v_{\text{1st slope}} = \text{max speed} = 0.75\text{m/s}$$

↑ v_{final}
max speed

$$a_{\text{1st slope}} = \frac{\Delta v}{\Delta t} = \frac{0.75\text{m/s}}{1.6\text{s}} = 0.47\text{m/s}^2$$

↑
a

2nd slope

$$a_{\text{slope 2}} = \frac{\Delta v}{\Delta t} = \frac{-0.75\text{m/s}}{0.7\text{s}} = -1.1\text{m/s}^2$$

↑
a