

# ONE DIMENSIONAL KINEMATICS

$$\text{I} \quad v(t) = v_0 + at$$

$$\text{II} \quad x(t) = \frac{1}{2} (v(t) + v_0)t = \bar{v}t$$

$$\text{III} \quad x(t) = x_0 + v_0t + \frac{1}{2}at^2$$

$$\text{IV} \quad v^2(x) = v_0^2 + 2ax$$

$x, v, a$  all carry ALGEBRAIC SIGNS

to account for DIRECTION AS ONE  
DIMENSIONAL VECTORS.

THE EQUATIONS ARE NOT INDEPENDENT

ELIMINATING  $t$  BETWEEN I & III  $\Rightarrow$  IV

ALSO SUBSTITUTING I INTO II FOR  $v$

YIELDS III.