~~t~~ x, v, a
m m/s m/s^2

notice there is no t

$\Delta = \Delta$

$\Delta = a\Delta$

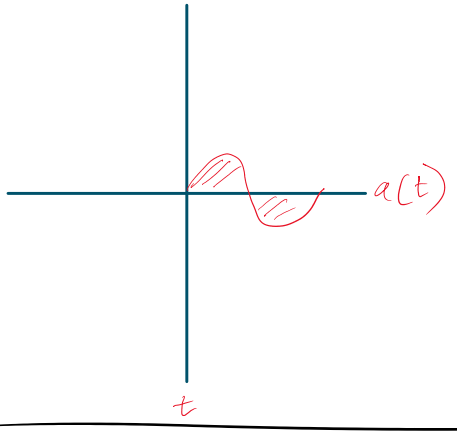
$\Delta v = a\Delta x$

$v_f - v_i = a(x_f - x_i)$
m/s m^2/s^2

$v_f^2 - v_i^2 = 2a(x_f - x_i)$ ← add 2 to both sides
m^2/s^2 m^2/s^2

Review Quiz

$V(t)$ where $a(t) = \sin(w \cdot t)$



equally area on + an − side,
so it is net 0, however
we don't know initial V (V_0),
we cannot assume it is 0,
so the answer is just V_0.

position:

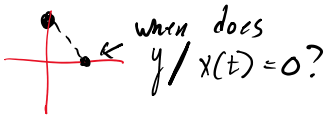
$x(t) = 4.0\,m - 2.0\,m/s \cdot t$

$x(t)$ – [illegible]

When does particle cross the origin

Not a good question, because it never does

At what time does the particle cross the origin



$x(t) = 0 = 4m - 2\frac{m}{s} \cdot t$

$t = 2s$

What is speed when it crosses origin

$v(t) = \frac{d\,x(t)}{dt} = -2 m/s$

What is displacement between $t=3$ & $t=6$?

$\Delta x = x_f - x_i = x(6) - x(3) = -8 - (-2) = \boxed{-6m}$

Quiz 2

$v = 5\ m/s \qquad t = 20\ s \qquad x = 6\ m$

$x(t) = 5t + C$ $\qquad \boxed{x(t) = 5\,m/s\,t - 94\,m}$

$x(20) = 6 = 5(20) + C$

$6 = 100 + C$

$C = -94$

How long does Tai Lung fly?

$t = 12\ s$

6s ↑ ↓ 6s

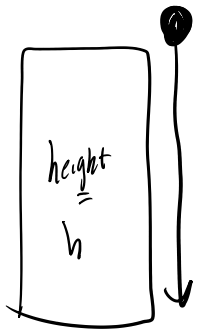
$x(t) = x_0 + v_0 t + \frac{1}{2} a t^2$

$-h = 0 + 0 - \frac{1}{2} g (6)^2$

$h = \boxed{180\ m}$

$-h = 0 - 0 - 2g$

$-h = \boxed{180\ m}$



$V_i =$

$a = -g$

$x_i = h$

$x_F = 0$

V of ball right before it hits the ground?

$$v_f^2 - v_i^2 = 2a(x_f - x_i)$$

$$v_f = -\sqrt{v_i^2 + 2gh}$$

$h = 10,\ v_1 = 5\ m/s$

$$v_f = -\sqrt{25 + 200} = -15\ m/s$$