Acceleration
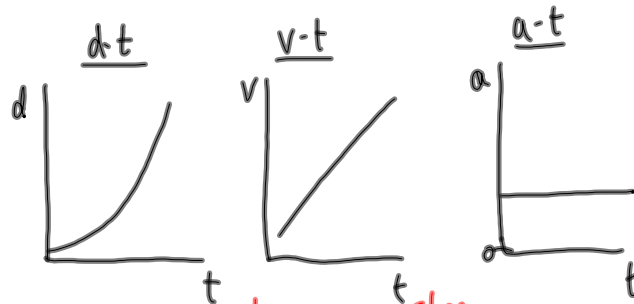
How do you know an object has acceleration by looking at a d-t? v-t? a-t? (constant)

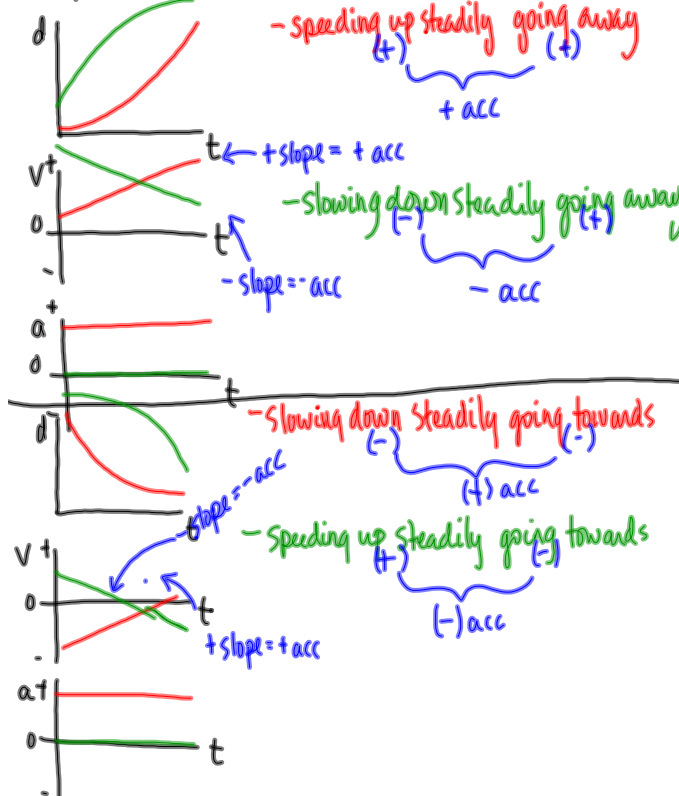$$V = \frac{\Delta d}{\Delta t} \qquad a = \frac{\Delta V}{\Delta t}$$
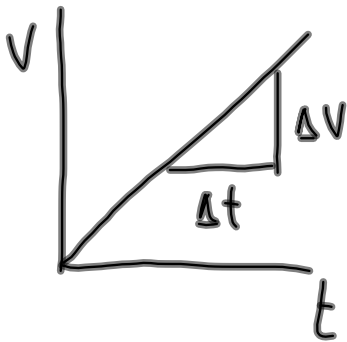
slope d-t   slope v-t

Graphs (d-t, v-t, a-t)

- speeding up steadily going away
  (+)   (+)
        + acc

← +slope = + acc

- slowing down steadily going away
  (-)   (+)
- slope = - acc   - acc

- slowing down steadily going towards
  (-)   (-)
        (+) acc

-slope = - acc

- speeding up steadily going towards
  (+)   (-)
        (-) acc

+ slope = + acc

Acceleration Equation

acceleration = slope

$$a = \frac{\Delta v}{\Delta t}$$

rearrange —>
if needed

$$a = \frac{V_f - V_i}{\Delta t}$$