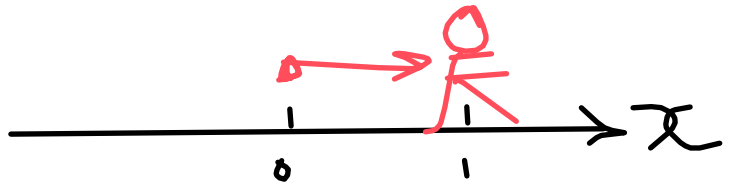
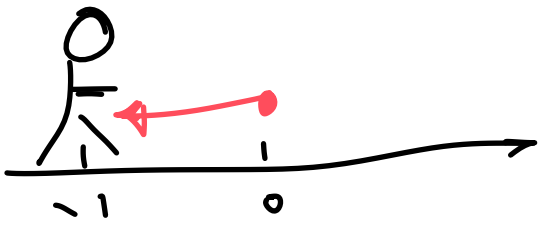


$t=0$   
 $x_0$   
 مکان اولیه

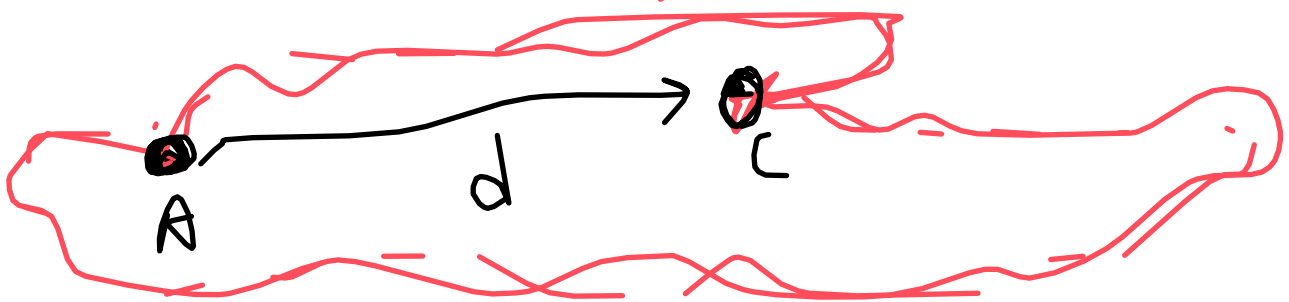
مراقبتان  
 (مراقبان)

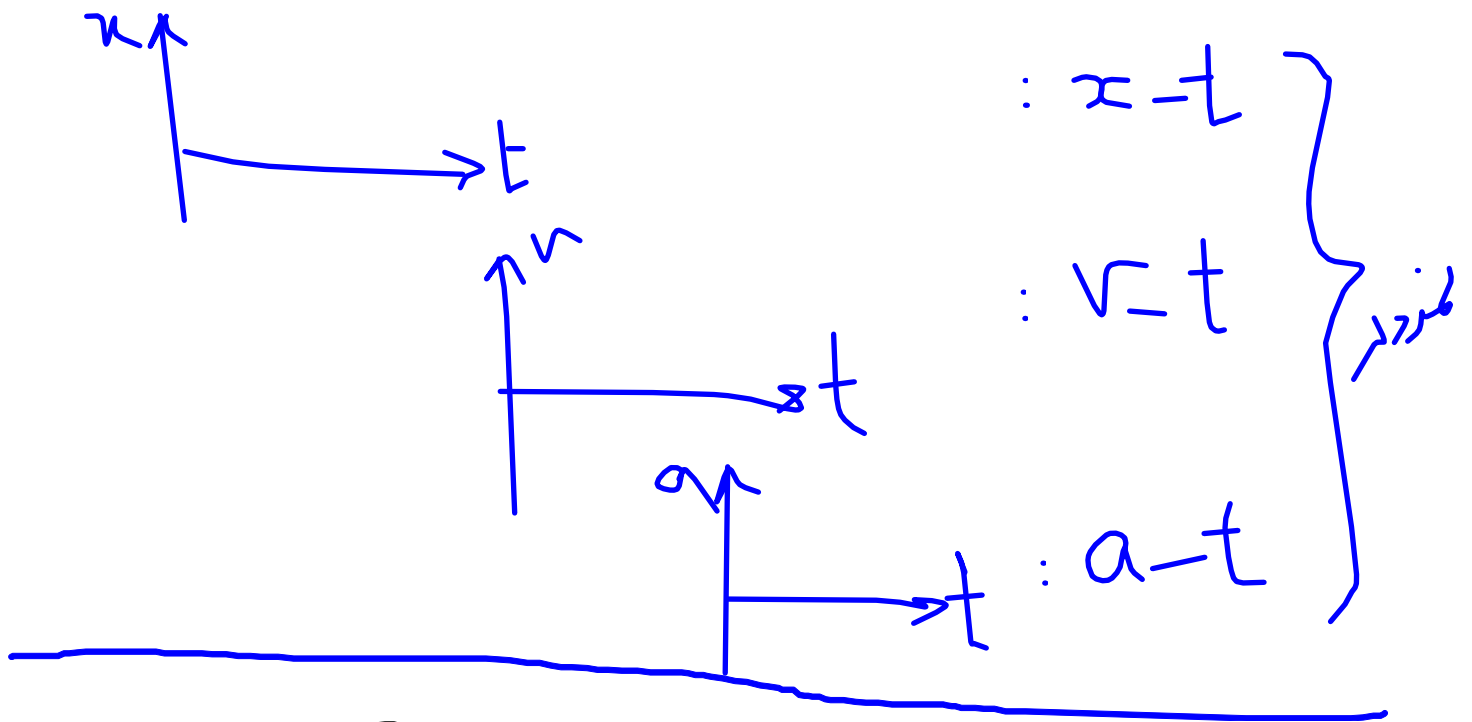
در دایره‌ها برداری است نه اشیای آن  
 مکان هم در هر لحظه است  $d_1, d_2, \dots$



بردار مکان زمانی تغییر جهت می‌دهد  
 از  $x=0$  در دو سویم  
 $\Delta x$  جابجایی  
 برداری است که ابتدا از آنجا رها می‌کنند

مسافت  $L$ : طول مسیر طی شده توسط حرکت





$$v_{av} = \frac{\Delta x}{\Delta t};$$

$$v = 110 \frac{km}{h}$$

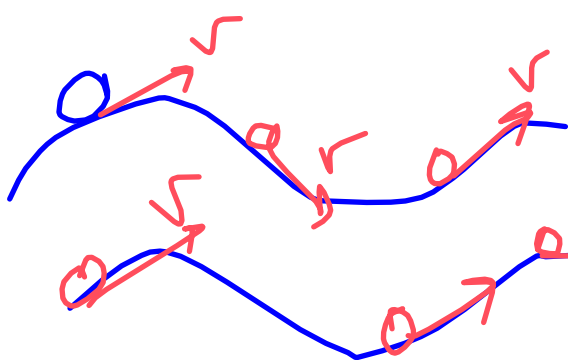
← متوسط  
← گزائی  
سرعت  
برگزائی

$$s_{av} = \frac{L}{\Delta t};$$

$$v = 110 \frac{km}{h} \quad \times$$

← متوسط  
← گزائی  
مندی  
نرخهای

① تغییر انداز سرعت تغییر کند

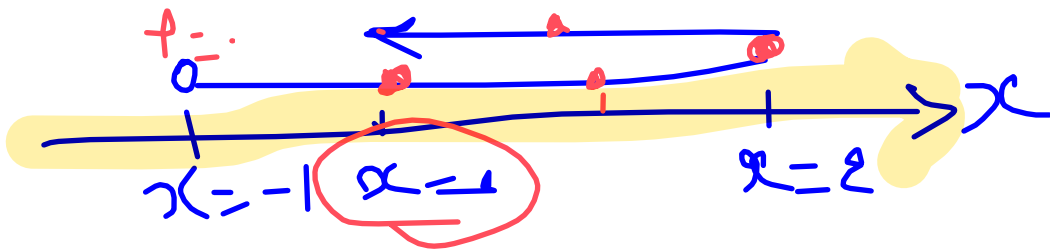


② جهت مکانی شود  
بدلر سرعت

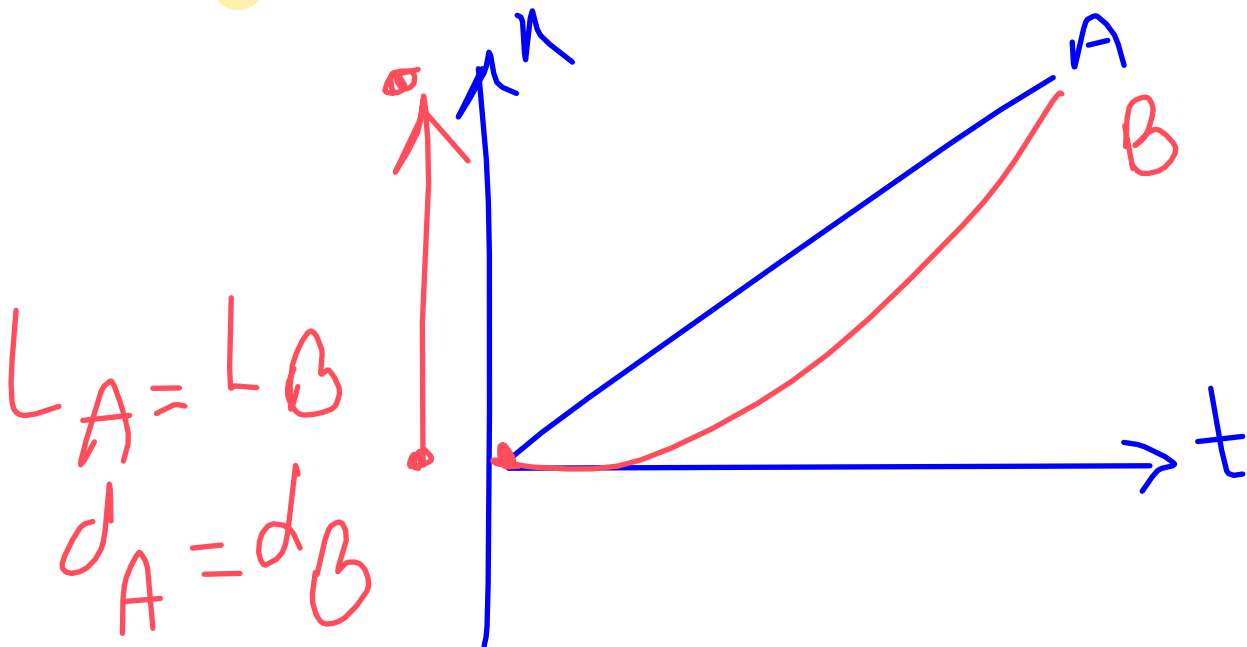
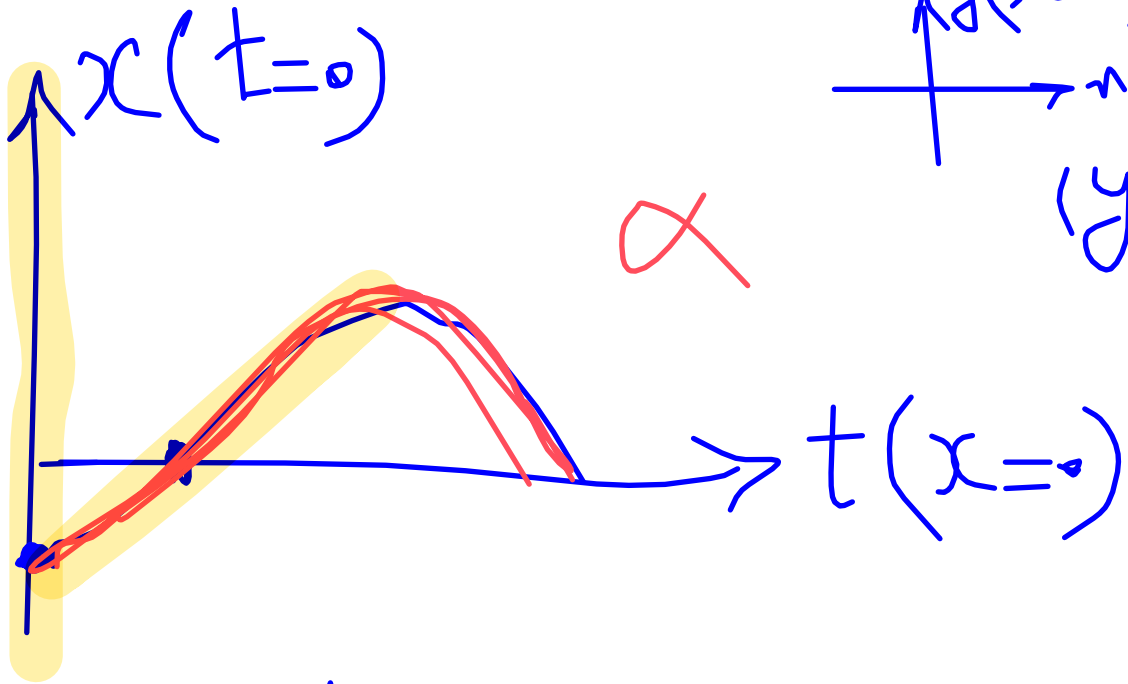
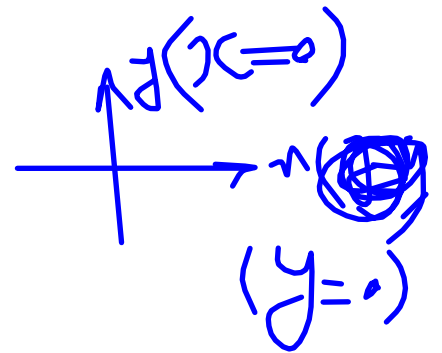
③  $a_{av} = \frac{\Delta v}{\Delta t}$

④ متوسط

$$: x-t$$

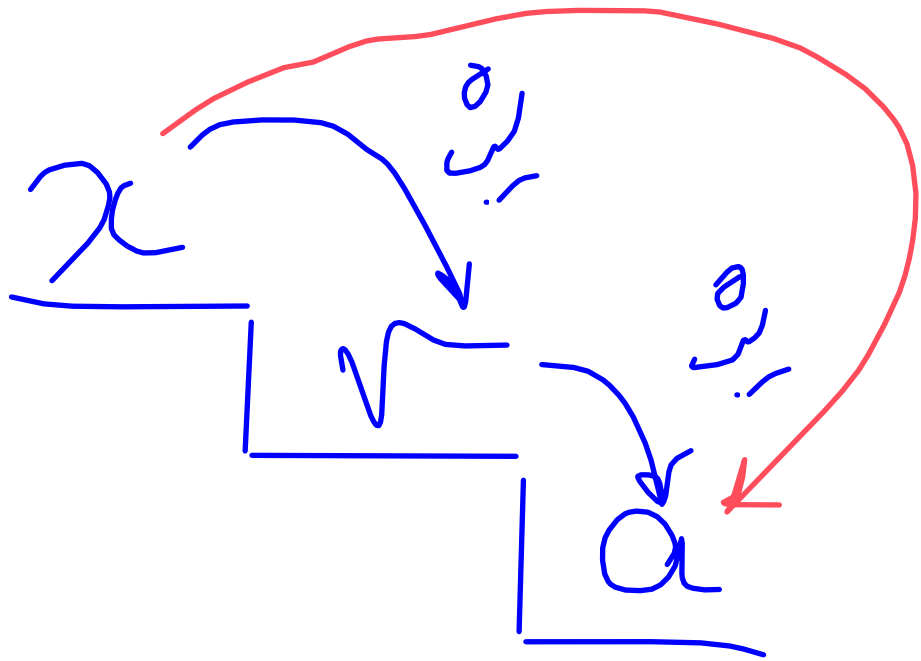


$t=0$        $t=1$   
 $x=-1$        $x=0$       ? ...



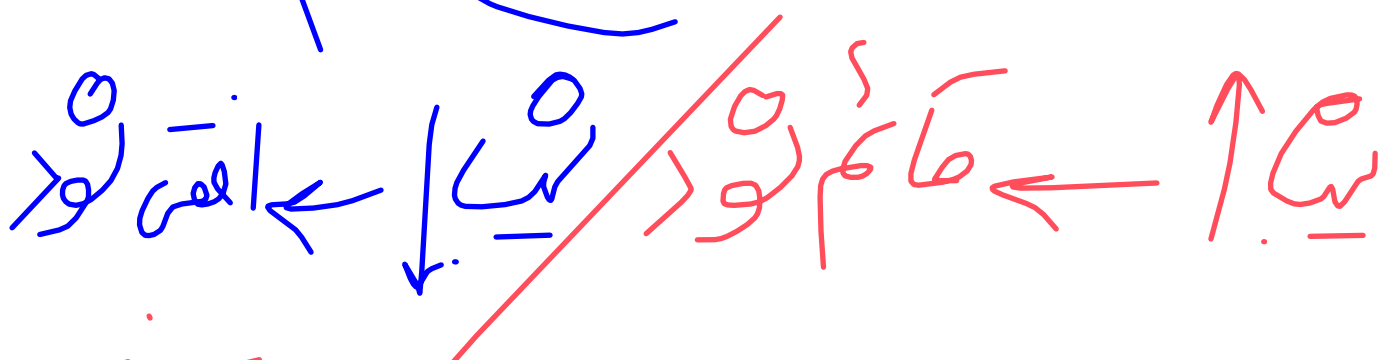
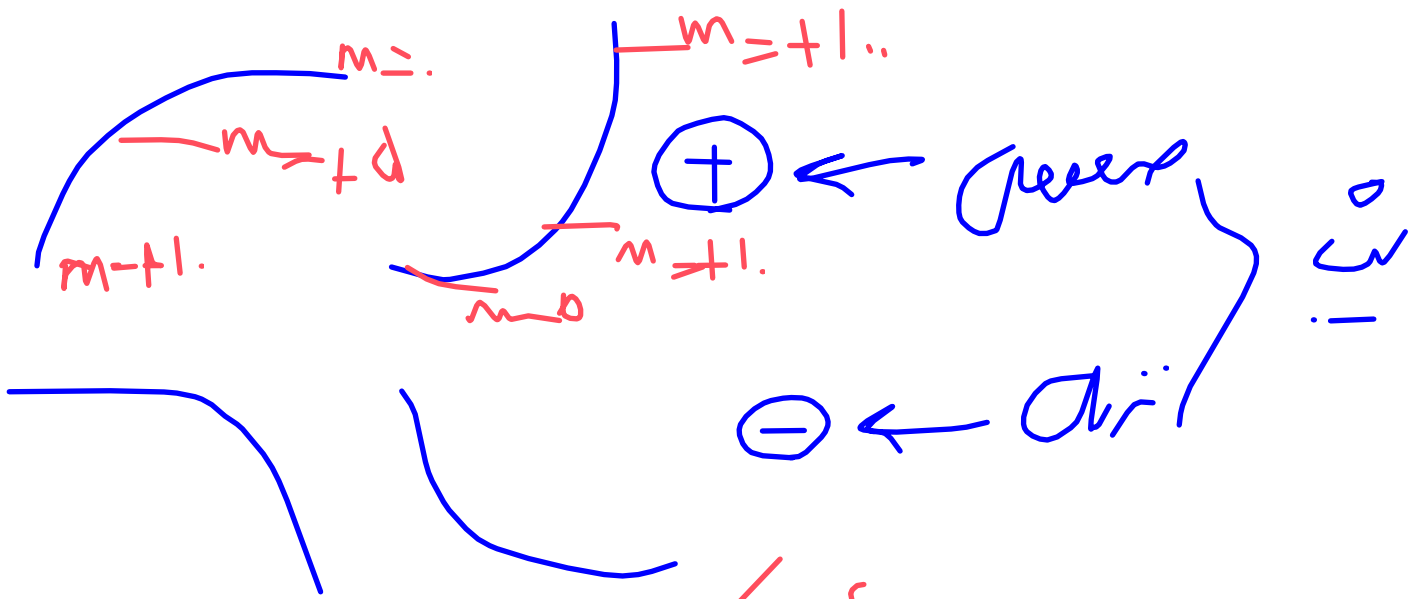
$$L_A = L_B$$

$$d_A = d_B$$



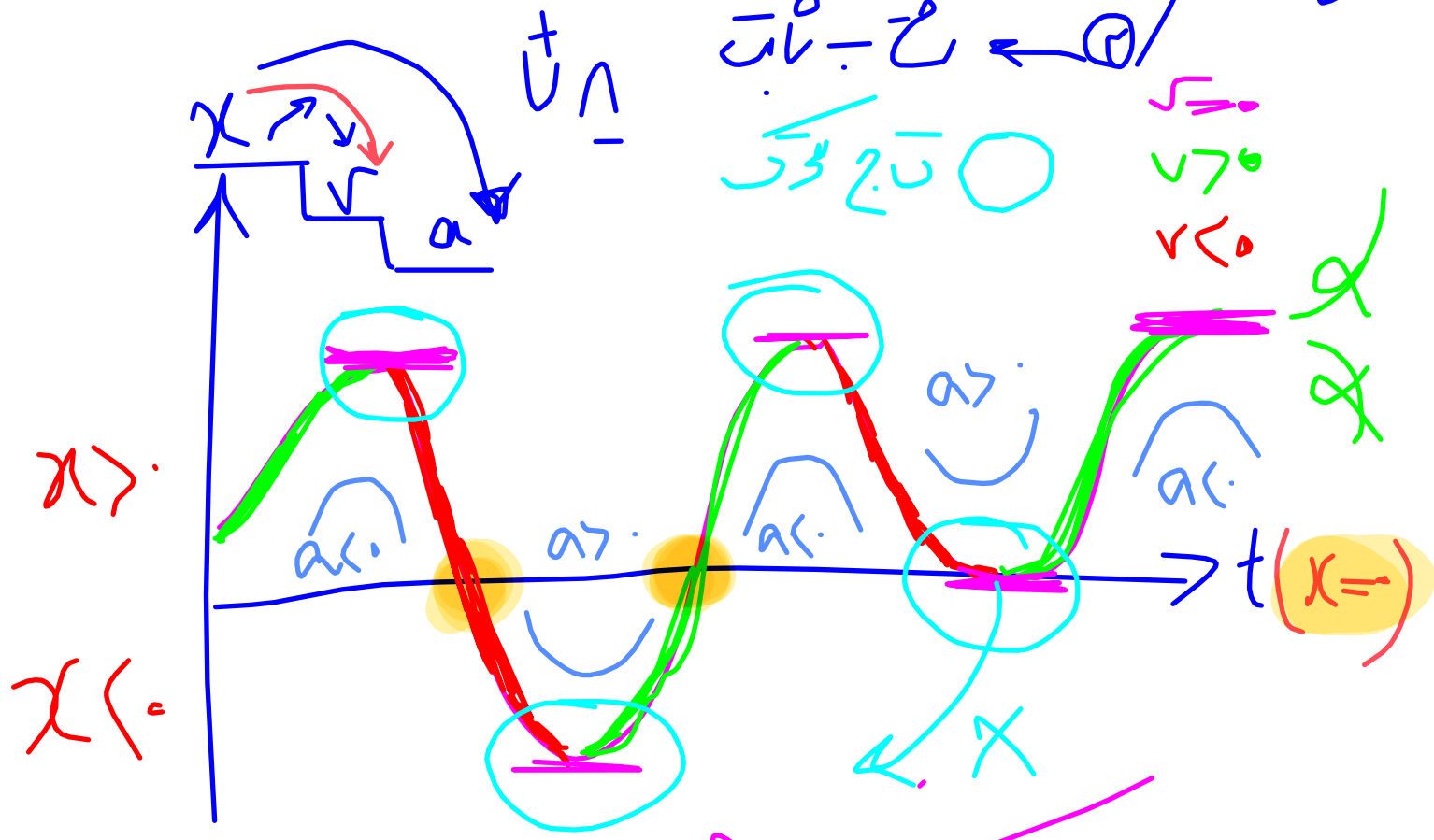
گودی  
(تعمیر)  
؟  
؟  
+

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

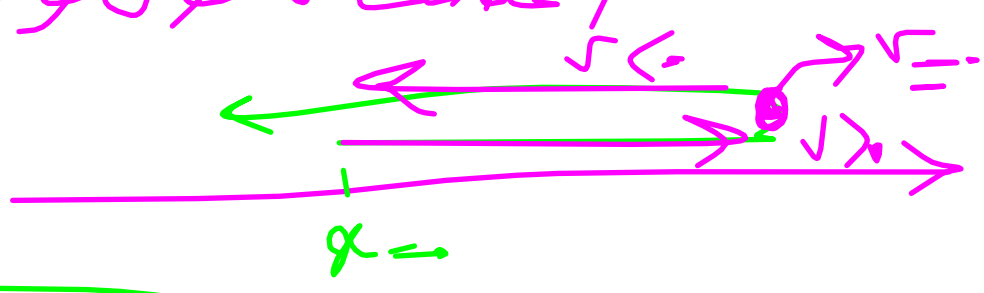


سب (در مدها) / سب (در مدها) و سب (در مدها)  
افزود / فازم بود  
سب

سرعت ثابت  $\leftarrow$  ①  
 شتاب ثابت  $\leftarrow$  ②



تغییر جهت حرکت  
 علامت  $v$  عوض می شود.



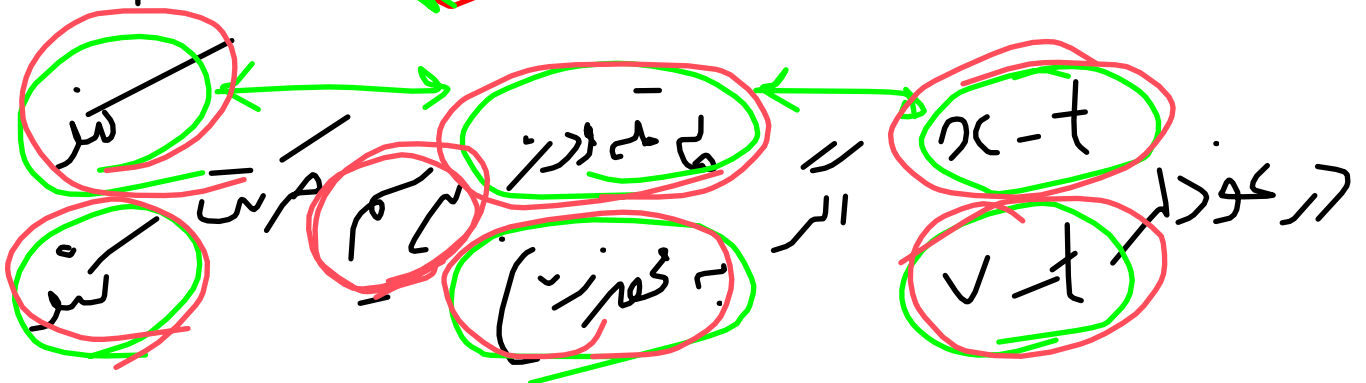
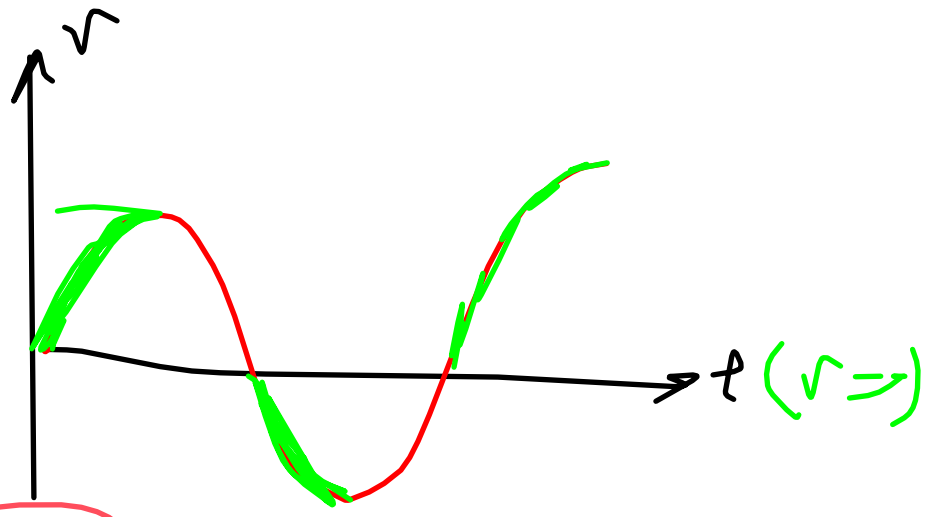
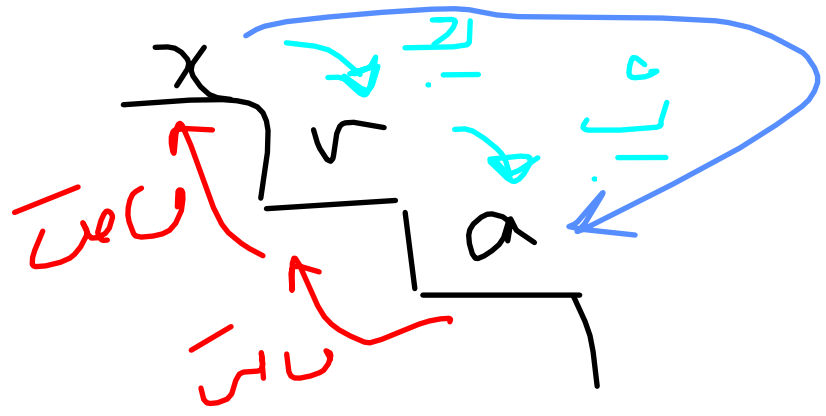
تند و کند در  $x-t$ : اگر به علامت شیب نگاه کنید

نزدیک و دور در  $v-t$ : اگر به علامت شیب نگاه کنید

کند  $\leftarrow$   $v \downarrow$  |  $a \cdot v < 0$   
 تند  $\leftarrow$   $v \uparrow$  |  $a \cdot v > 0$



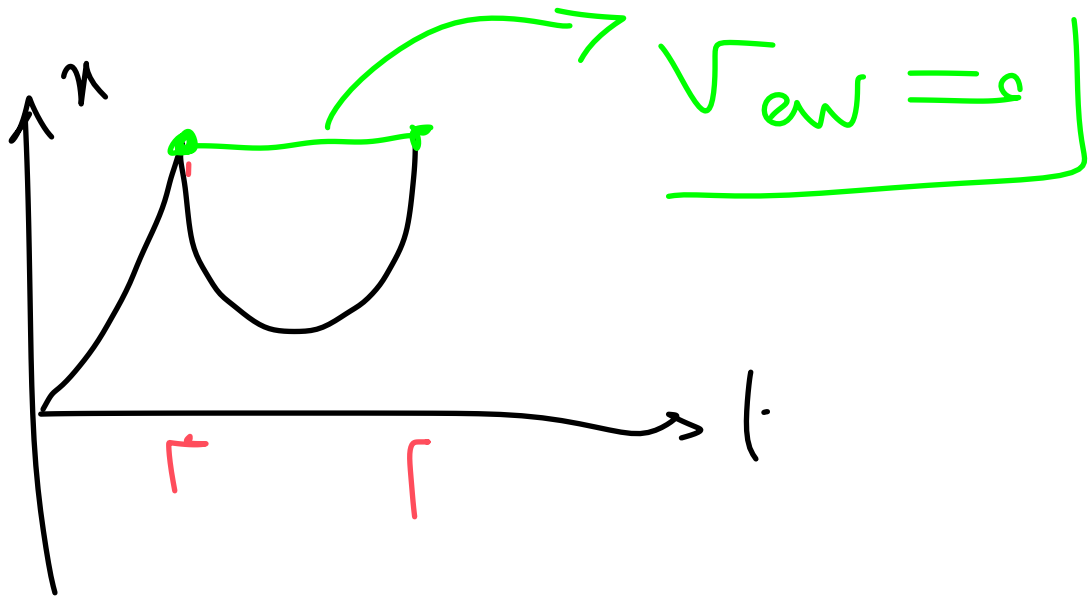
گونی



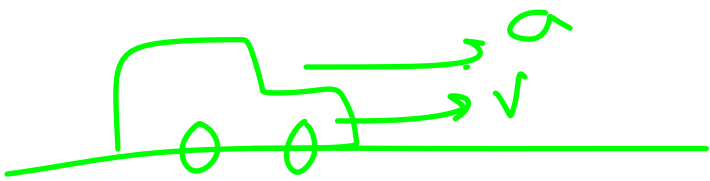
مبتدیان ← در خود

مبتدیان ← در خود

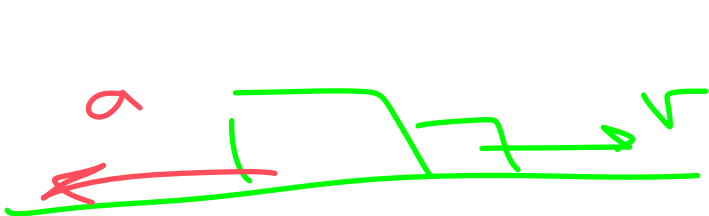
مبتدیان ← در خود



$$\frac{km}{h} \xrightarrow{-\frac{2\pi y}{h}} \frac{m}{s}$$



تیز  $a \cdot v >$



باز  $a \cdot v <$

$L = d$  →  $S_{av} = \bar{v}_{av}$

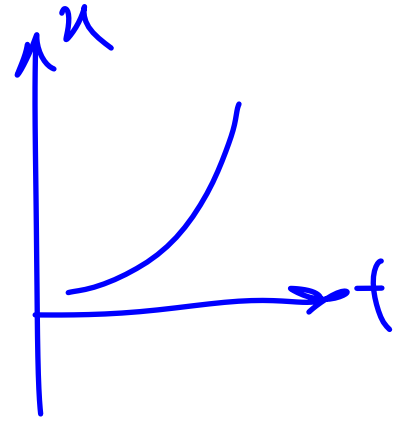
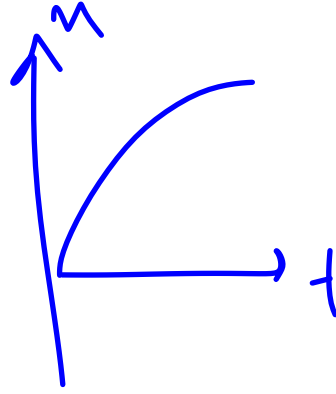
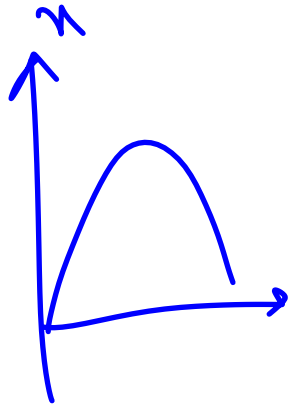
اگر حرکت یکنواخت باشد  $\bar{v} = v$

$\bar{\Delta x} = 1 - 0 = 1$

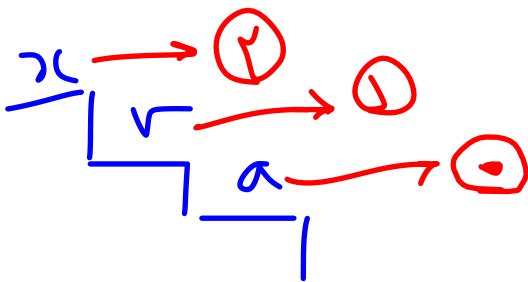
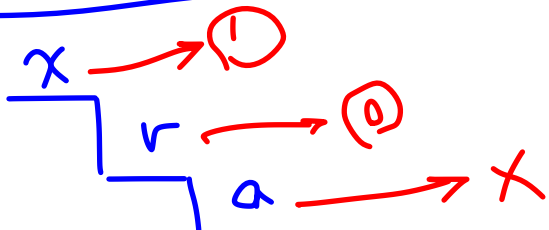
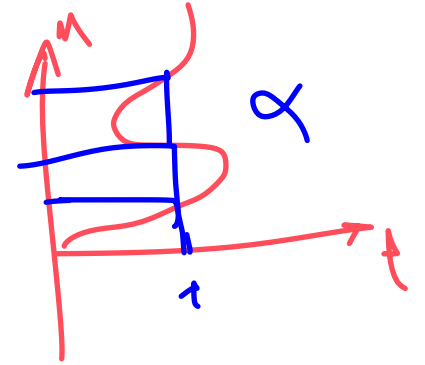
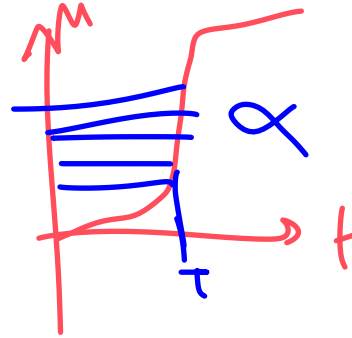
$L \neq d$

$S_{av} \neq \bar{v}_{av}$





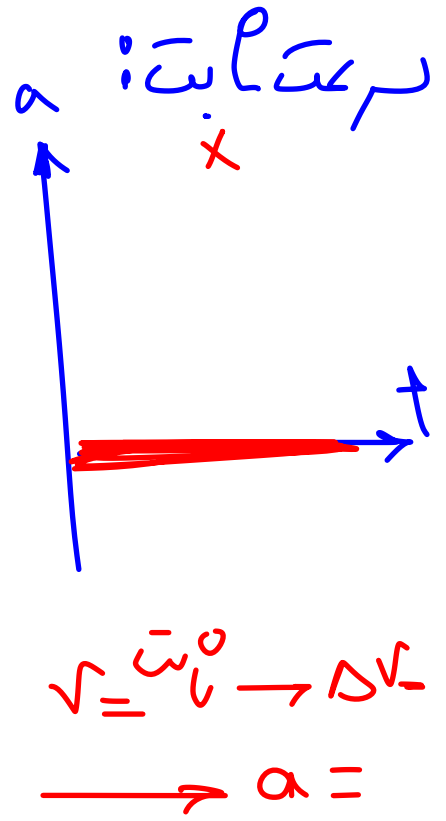
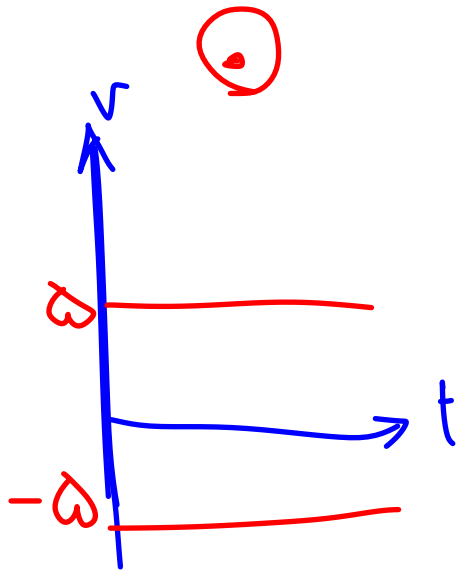
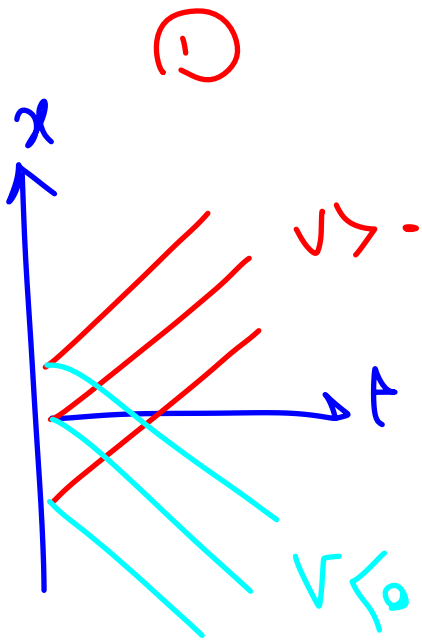
سیر



سرعت

تسارن

حرکت



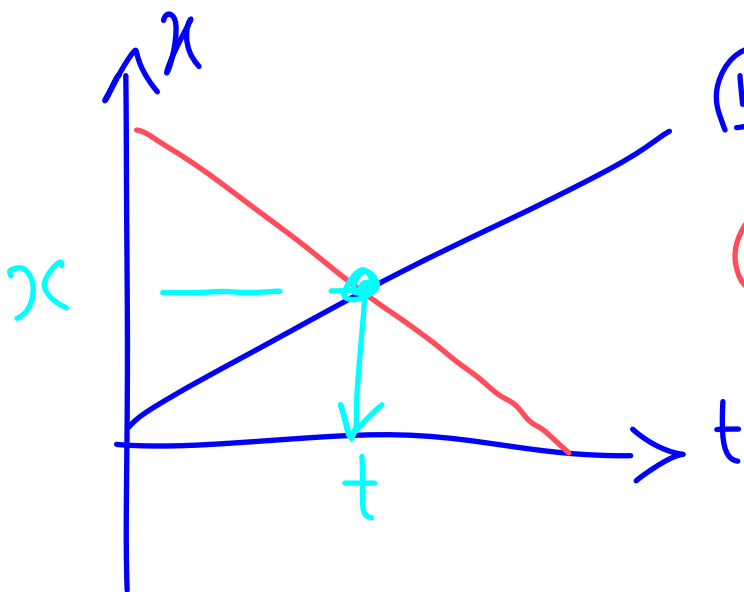
$\Delta x = vt$

$x = vt + x_0$  (معادله حرکت)

فاصله

در حرکت همواره  $x_1 = x_0$

- ①  
 ②  
 ③
- روابط



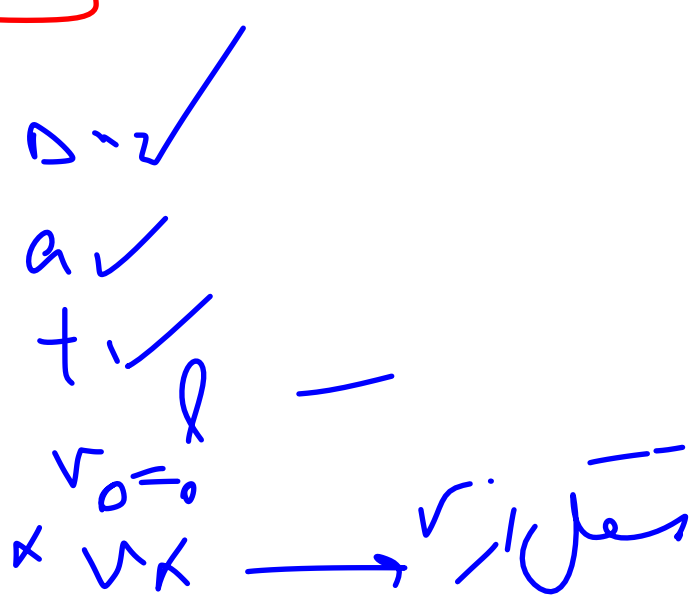
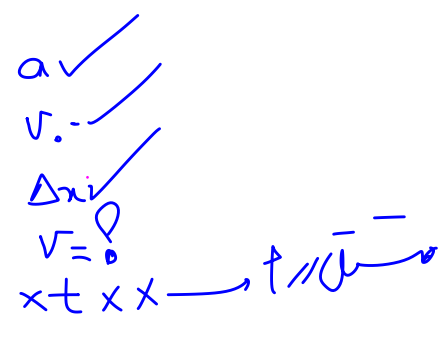
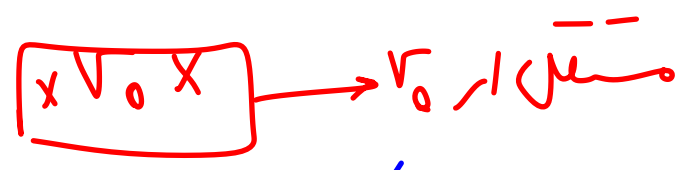
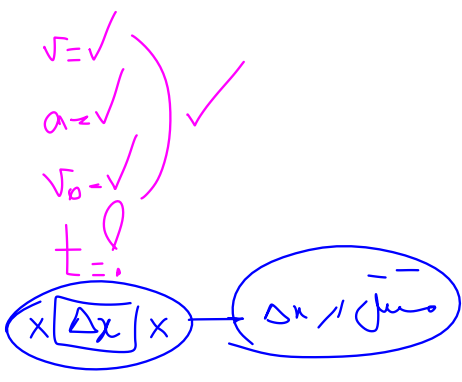
$v_1 t + x_0 = v_2 t + x_1$

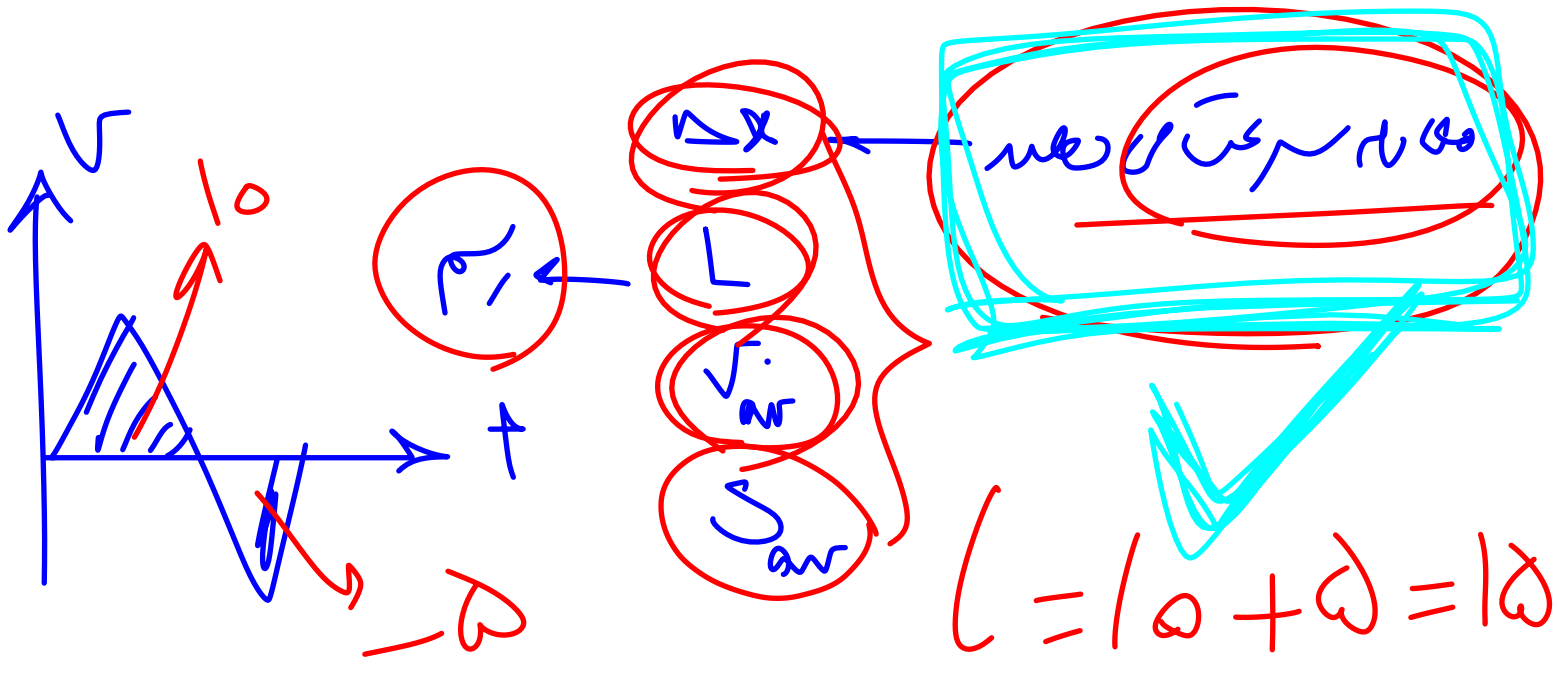
①

②

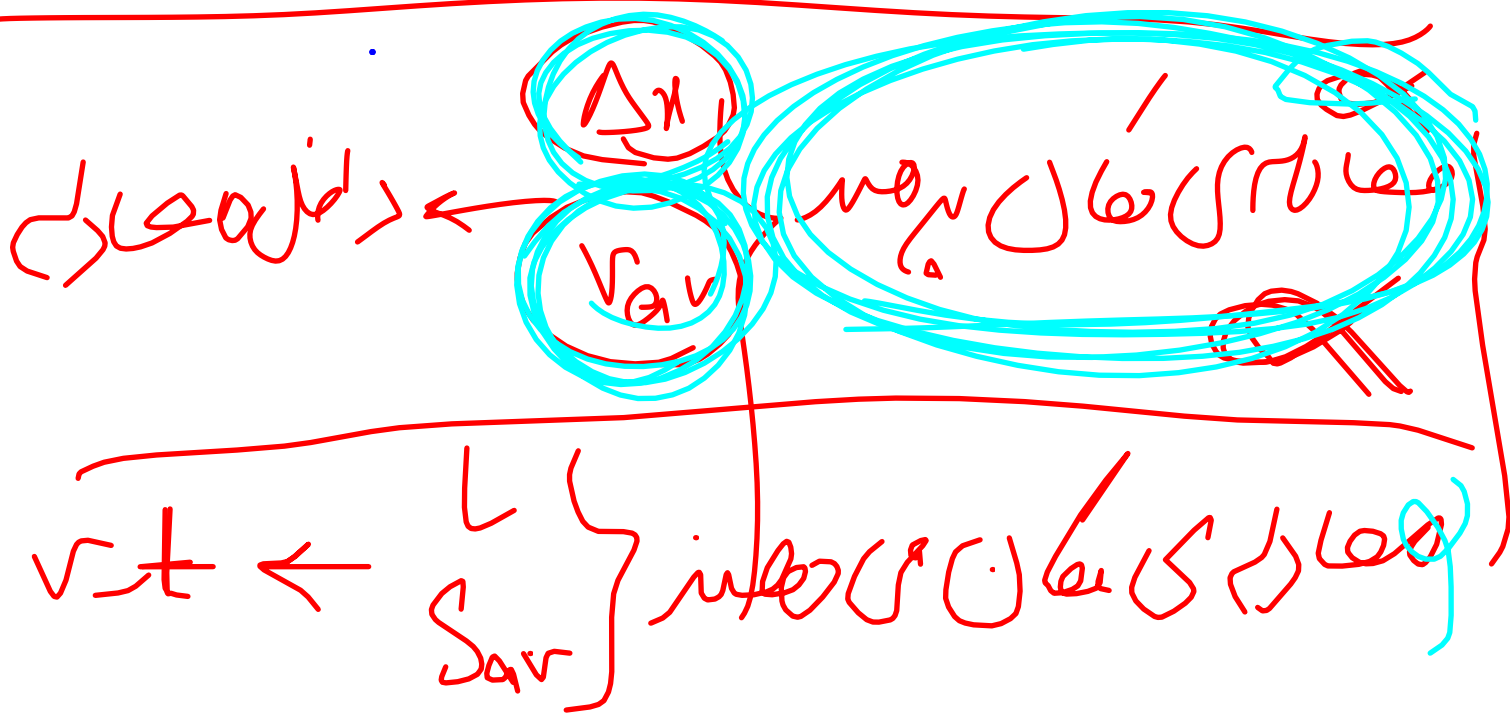
$v_0$  (initial),  $\Delta x$ ,  $t$ ,  $a$ ,  $v_{\text{final}}$  ←  $\bar{v}$  (average)

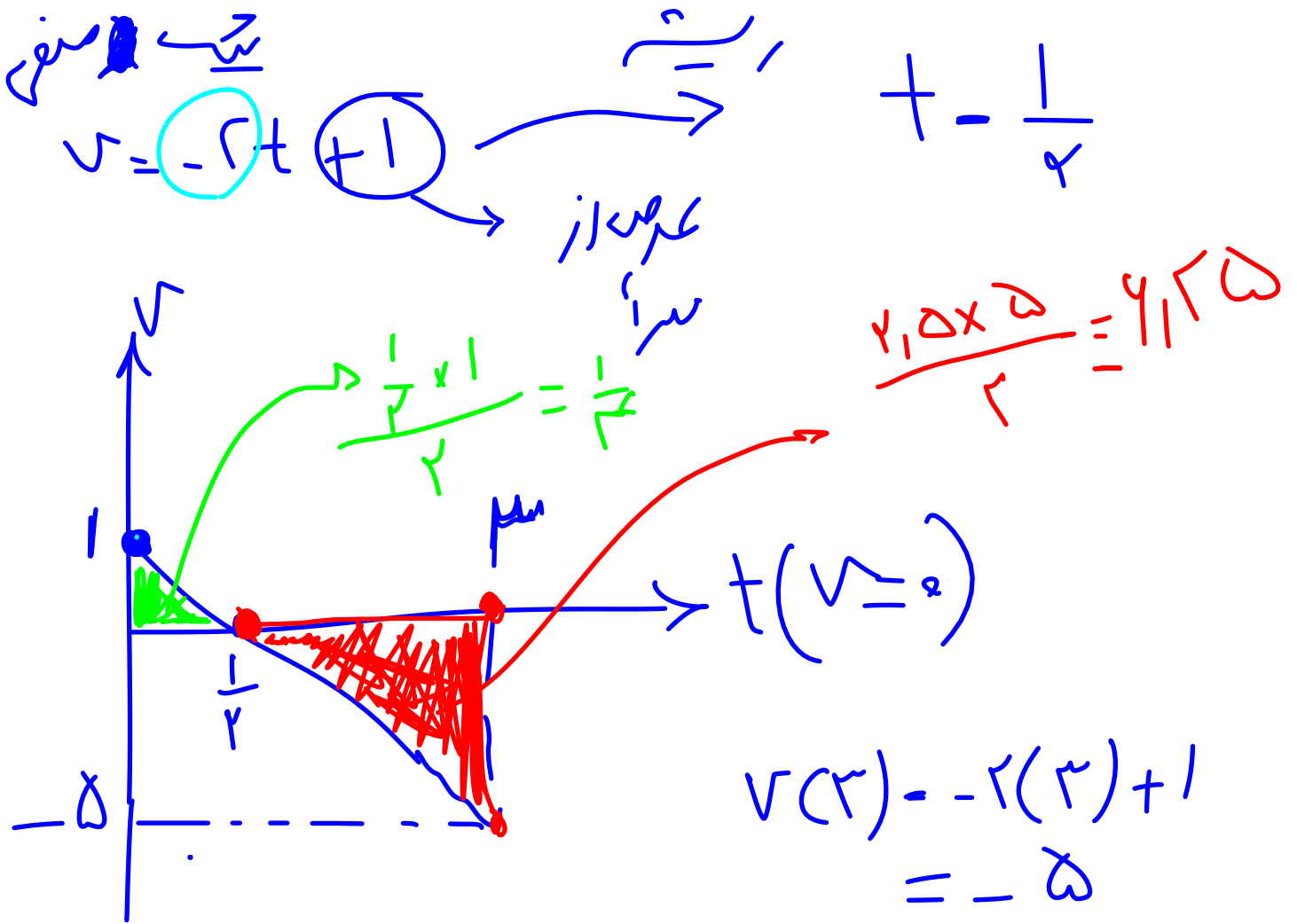
- ①  $\Delta x = \frac{1}{2} a t^2 + v_0 t$        $v \times t$  /  $\bar{v}$
- ②  $v = a t + v_0$        $\Delta x \times \bar{v}$
- ③  $\Delta x = \frac{v + v_0}{2} t$        $a \times t$  ~  $v_{\text{av}}$
- ④  $v^2 - v_0^2 = 2 a \Delta x$        $t \times \bar{v}$
- ⑤  $\Delta x = -\frac{1}{2} a t^2 + \bar{v} t$        $v_0 \times t$  ~





$$\Delta x = l_0 - \omega = \omega$$





$$\Delta x = 0,1 r \delta - \gamma_1 r \delta = -\gamma$$

$$v_{av} = \frac{-\gamma}{r} = -r$$

$$L = 0,1 r \delta + \gamma_1 r \delta = \gamma_1 \omega$$

$$S_{av} = \frac{\gamma_1 \omega}{r} = \checkmark$$





































