L3,4)

x	10	20	30	40	50	60	70
$t(x)$	7,24	7,30	7,36	7,42	7,48	7,54	7,60

Intervalos: 10, 10, 10, 10, 10, 10 (entre os x)

0,06, 0,06, 0,06, 0,06, 0,06, 0,06 (entre os $t(x)$)
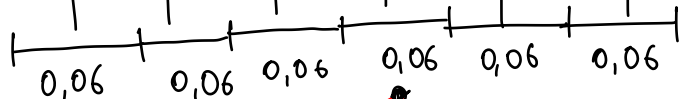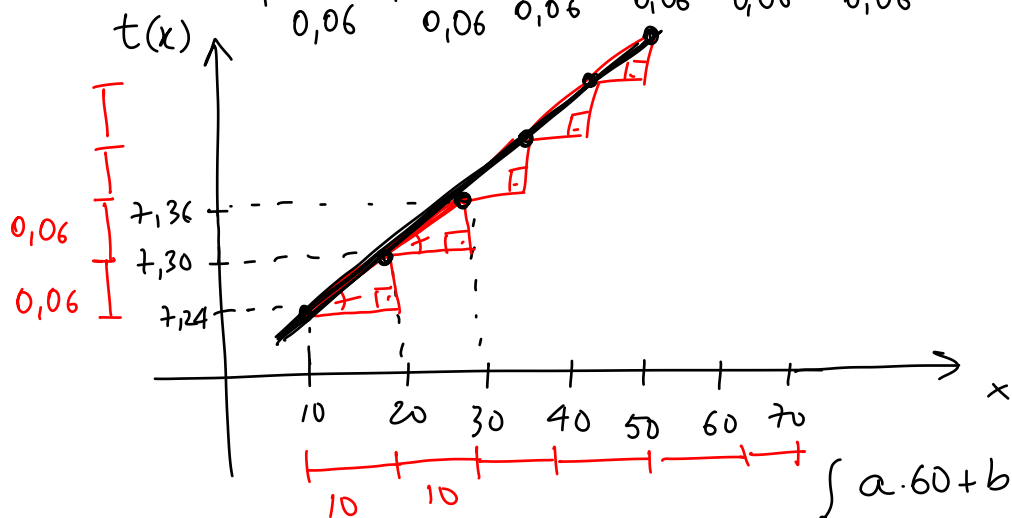
PROPORCIONAL!

$y = ax + b$

$t(x)$ é uma função afim.

$t(x) = ax + b$

$$\begin{cases} a \cdot 60 + b = t(60) = 7,54 \\ a \cdot 20 + b = t(20) = 7,30 \end{cases}$$

$60a + b = 7,54 \Rightarrow b = 7,54 - 60a$

$20a + b = 7,30 \Rightarrow 20a + 7,54 - 60a = 7,30 \Rightarrow -40a = -0,24$

$$\Rightarrow a = \frac{0,24}{40} = 0,006$$

$$\Rightarrow b = 7,54 - 60 \cdot 0,006 = 7,18$$

$$\therefore \quad t(x) = 0,006\,x + 7,18 \,.$$

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x	1	2	3	4	5
$t(x)$	1	4	9	16	25

$t(1) = 1$

$t(2) = 4$

$t(3) = 9$

$\vdots$

$t(x) = x^2$

L5,5)
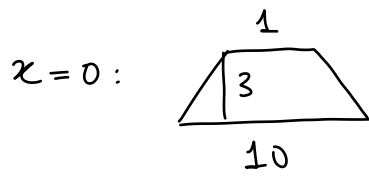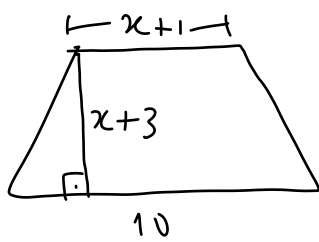
$A(x) = f(x) = ax^2 + bx + c$

$A = \dfrac{h \cdot (B+b)}{2}$

$x = 0:$ $\quad A = \dfrac{(10+1)\,3}{2} = \dfrac{33}{2}$
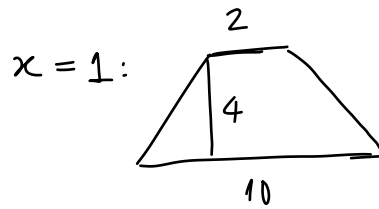
$x = 1:$ $\quad A = \dfrac{(10+2) \cdot 4}{2} = 24$

$$\frac{h(B+b)}{2} = \frac{(x+3)\big[10 + (x+1)\big]}{2} = ax^2 + bx + c = f(x)$$

$$\frac{(x+3)\big[11+x\big]}{2} = ax^2 + bx + c \quad \Rightarrow \quad \frac{11x + x^2 + 33 + 3x}{2} = ax^2 + bx + c$$

$$\Rightarrow x^2 + 14x + 33 = 2ax^2 + 2bx + 2c \quad \Rightarrow \quad \begin{cases} 2a = 1 \\ 2b = 14 \\ 2c = 33 \end{cases} \Rightarrow \begin{cases} a = \tfrac{1}{2} \\ b = 7 \\ c = \tfrac{33}{2} \end{cases}$$

$x = 3: \quad A(3) = \dfrac{1}{2} \cdot 3^2 + 7 \cdot 3 + \dfrac{33}{2} = \dfrac{9}{2} + 21 + \dfrac{33}{2} = 42.$
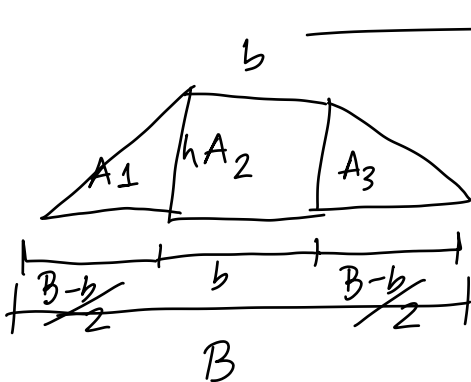
$A = A_1 + A_2 + A_3$

$$= \frac{\frac{B-b}{2} \cdot h}{2} + b \cdot h + \frac{\frac{B-b}{2} \cdot h}{2}$$

$$= \frac{B-b}{2} \cdot h + b \cdot h = \frac{(B-b) \cdot h + 2bh}{2}$$

$$= \frac{Bh - bh + 2bh}{2} = \frac{Bh + bh}{2} = \frac{h(B+b)}{2}$$

L5,10) ① 200 km em t horas com velocidade v
       ② 200 km em (t-1) horas com velocidade $v+10$.

① $v = \dfrac{\Delta s}{\Delta t} = \dfrac{200}{t} \Rightarrow vt = 200$

② $v+10 = \dfrac{200}{t-1} \Rightarrow (v+10)(t-1) = 200$

$\Rightarrow vt - v + 10t - 10 = 200$

$\Rightarrow 200 - v + 10t - 10 = 200$

$\Rightarrow 10t - v - 10 = 0$

(×t)
$\Rightarrow 10t^2 - vt - 10t = 0$

$\Rightarrow 10t^2 - 10t - 200 = 0$

(÷10)
$\Rightarrow t^2 - t - 20 = 0$

$\Delta = (-1)^2 - 4 \cdot 1 \cdot (-20) = 1 + 80 = 81$

$t = \dfrac{1 \pm 9}{2} \Rightarrow t = 5 \quad ou \quad \cancel{t = -4}$

Assim, $v = \dfrac{200}{5} = 40 \ km/h.$

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$S(t) = S_0 + vt$ (velocidade cte) MRU / MLU

$S(t) = S_0 + vt + \dfrac{a}{2}t^2$ (aceleração cte) MUV