

# FUNÇÕES QUADRÁTICAS y NOTAS TRIGONOMETRICAS ①

① a)  $f(x) = 3(x+1)^2 - 12 = 3 \cdot (x^2 + 2x + 1) - 12 = 3x^2 + 6x + 3 - 12 = 3x^2 + 6x - 9$  c.p.d.

b) eja  $\rightarrow \frac{-b}{2a} = \frac{-6}{6} = -1$

c)  $f(x) = -12$   $\boxed{\text{P}_{\text{verte}} (-1, -12)}$

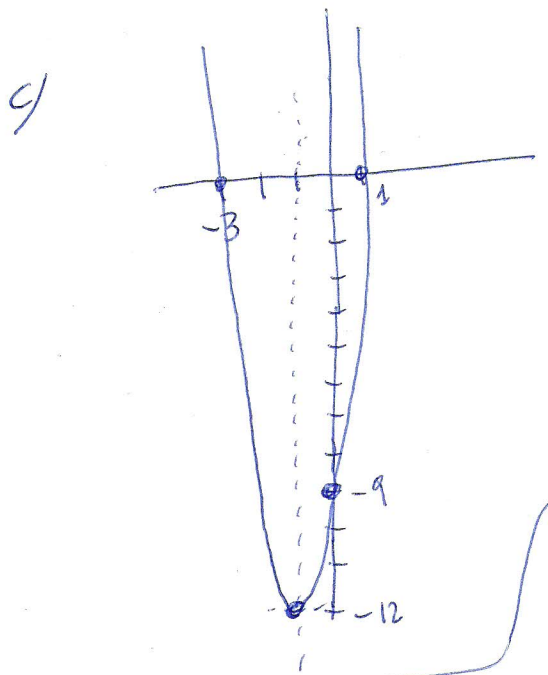
f.b.  $f(x) = 3(x+1)^2 - 12$   
 $P(0,0)$  desloca 1 unidade  $\downarrow$  para a esquerda  
 desloca 12 unidades  $\downarrow$  para baixo  
 desloca verticalmente -12 unidades  $\downarrow$

ii) y-intercept  $\rightarrow x=0 \rightarrow f(0) = -9$

$\boxed{\text{P}_{\text{y-intercept}} (0, -9)}$

iii) x-intercepts  $\rightarrow y=0$

$0 = 3x^2 + 6x - 9 \rightarrow x = \frac{-6 \pm \sqrt{36 + 4 \cdot 3 \cdot 9}}{6} = \frac{-6 \pm \sqrt{36 + 108}}{6} = \frac{-6 \pm 12}{6}$   
 $x_1 = -3$   
 $x_2 = 1$



d)  $g(x) = x^2$

$\boxed{t=3}$

(P+ horizontal)  
(q+ vertical)

$\rightarrow \begin{pmatrix} -1 \\ -12 \end{pmatrix}$

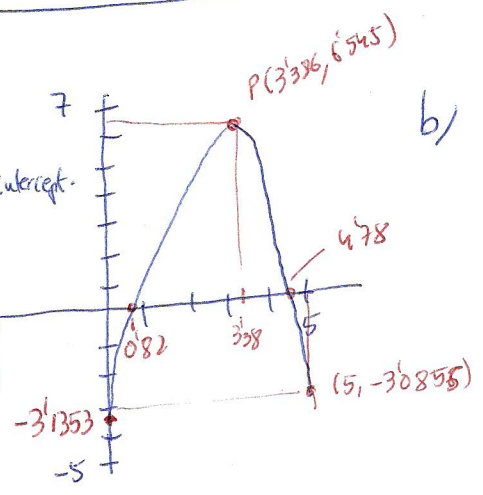
$f(x) = 3(x+1)^2 - 12$   
 3: stretching  
 +1: horizontal  
 -12: vertical

② a) x-intercepts  $\rightarrow y=0 \rightarrow$  ou C.G.

$\boxed{P(0,82,0) \text{ y } Q(3,39,6,55)}$

4) gradient at  $x=3 \rightarrow f'(3) \rightarrow$  ou C.G.

$\boxed{f'(3) = 128}$



③  $y = \frac{2x-1}{x+1}$ ;  $x \neq -1$

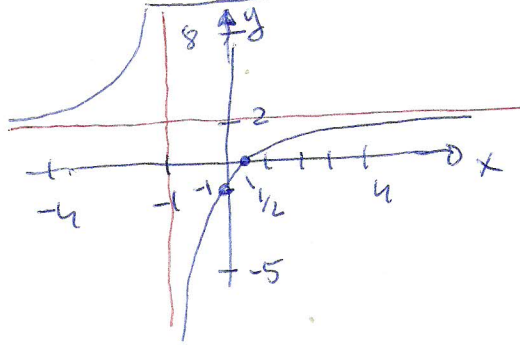
②

a)  $h^{-1}(x) \rightarrow x = \frac{2y-1}{y+1} \rightarrow xy+x=2y-1 \rightarrow x+1=2y-xy \rightarrow x+1=y(2-x) \rightarrow$

$\rightarrow \frac{x+1}{2-x} = y$

$h^{-1}(x) = \frac{x+1}{2-x}$

b) i)  $\text{Car C.G} \rightarrow$



ii)

AK  $\rightarrow y = 2$

AV  $\rightarrow x = -1$

iii)  $x$  intercept  $\rightarrow x = \frac{1}{2}$   $P(\frac{1}{2}, 0)$

④ a) i)  $\rightarrow t=0 \rightarrow f(0) = 106$  (m)

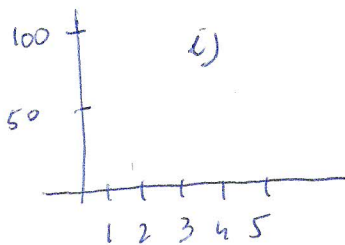
ii)  $\rightarrow t=5 \rightarrow f(5) = 26.4$  (m)

iii)  $f(t) = 30 \rightarrow -0.25t^3 - 2.32t^2 + 1.93t + 106 = 30 \rightarrow \text{Car C.G} \rightarrow t = 4.91$  (s)

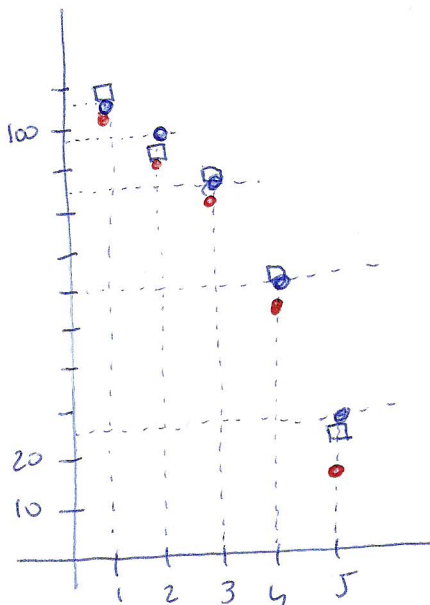
b) i)  $g(t) = -5.2t^2 + 9.5t + 100 \Rightarrow 0$  when hits the ground.

$-5.2t^2 + 9.5t + 100 = 0 \rightarrow \text{Car C.G.} \rightarrow t = 5.39$  (s)

c) ii)



Es mejor lo de Jone. & opta mejor e la parte de la fiebla. Lo de Kevin k separa mas.



● = profire table  
 JANE = □  
 Kevin = ●

Usando C.G.  
 Representar la  
 Juvia y Sacar  
 Valores para la y  
 en diferecia x.  
 (Asi + rapido)

