SANDRO CAMPERIO.
Taller EXAMEN.

① $f(x) = 2x - 1$

$g(x) = \dfrac{3x - 1}{2x + 4}$

a) $\text{Dom}.\, g(x) = x \in \mathbb{R} \,/\, 2x + 4 \neq 0.$

$2x + 4 \neq 0$

$x \neq -2.$

$\text{Dom}.\, g(x) = \mathbb{R} - \{-2\}.$

b) $f(0) = 2 \cdot 0 - 1 \Rightarrow f(0) = -1.$

$f(f(0)) = f(-1) = 2 \cdot (-1) - 1 = -2 - 1 \Rightarrow f(f(0)) = -3.$

$f(a) = 2a - 1.$

$g(f(a)) = \dfrac{3 \cdot (2a - 1) - 1}{2 \cdot (2a - 1) + 4} = -3$

$= \dfrac{6a - 3 - 1}{4a - 2 + 4} = -3.$

$= \dfrac{6a - 4}{4a + 2} = -3$

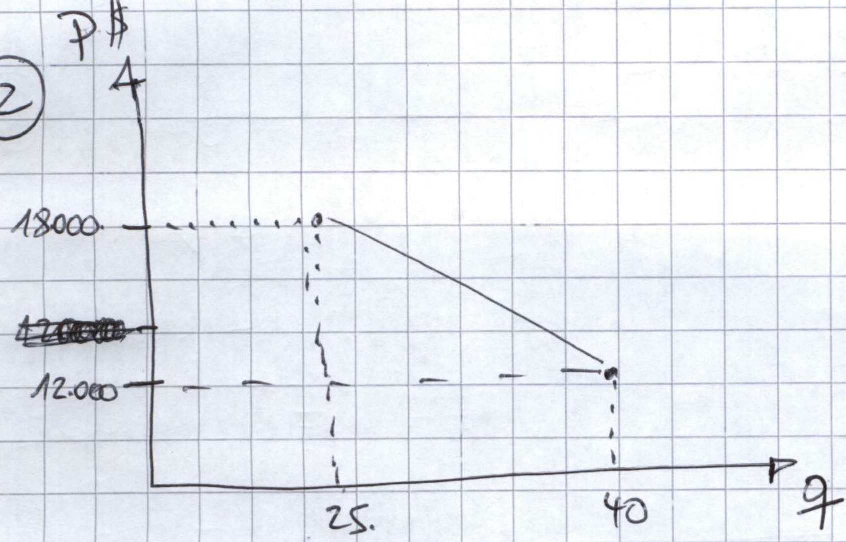
$= 6a - 4 = -12a - 6$

$= 12a + 6a = -6 + 4$

$18a = -2$

$\boxed{a = -\dfrac{1}{9}}$

(2)



$$y - 18000 = -\left(\frac{18000 - 12000}{40 - 25}\right)(x - 25)$$

$$y - 18000 = -\frac{6000}{15}(x - 25$$

$$y = -400x + 10.000 + 18000$$

$$y = -400x + 28000$$

$$y = -400q + 28000$$

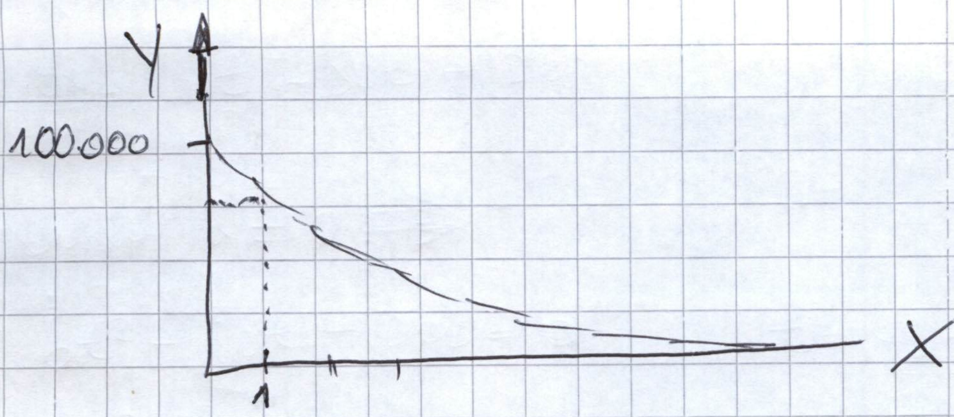
Si q vale 30:

$$P = -400 \cdot 30 + 28000$$

$$P = -12000 + 28000$$

$$P = 16.000$$ precio en $.

③. $N(t) = 100.000\, e^{-0{,}0558t}$



$N(1) = 100.000 \cdot e^{-0{,}05528 \cdot 1}$

$N(1) \approx 94573$ // UN.

$50.000 = 100.000\, e^{-0{,}0558t}$

$e^{-0{,}0588t} = \frac{1}{2}$ / Ln.

$-0{,}0558t = Ln\left(\frac{1}{2}\right)$

$t = \frac{Ln\left(1/2\right)}{-0{,}0558}$

$\boxed{t = 12 \text{ meses}}$ //

④ $N(t) = 2t^3 - 40t^2 + 200t + 50.$

a) $\frac{dN}{dt} = 6t - 80t + 200$

Igualar a $= 0 \Rightarrow$

$6t^2 - 80t + 200 = 0$

$3t^2 - 40t + 100 = 0$

$t = \frac{40 \pm \sqrt{40^2 - 4 \cdot 3 \cdot 100}}{6}$

$t = \frac{40 \pm \sqrt{1600 - 1200}}{6}$

$t = \frac{40 \pm \sqrt{400}}{6}$

$t_1 = \frac{40 + 20}{6}$ $\quad$ $t_2 \; \frac{40 - 20}{6}$

$t_1 = \frac{60}{6} = \boxed{10 \text{ días}}$ $\quad$ $\boxed{t_2 = \frac{10}{3} \text{ días}}$

$\frac{d^2N}{dt^2} = 12t - 80.$

1) $\frac{d^2N}{dt^2}(t = 10) = 120 - 80 = 40 > 0 \therefore t10$ es un mínimo

2) $\frac{d^2N}{dt^2}\left(t = \frac{10}{3}\right) = \frac{120}{3} - 80 = 40 - 80 = -40 < 0$

Por lo tanto a los $\frac{10}{3}$ es un MÁXIMO

A los $\frac{10}{3}$ días se conocerá la mayor cantidad de Personas

b) $N\left(\frac{10}{3}\right) = 2\left(\frac{10}{3}\right)^3 - 40\left(\frac{10}{3}\right)^2 + 200\left(\frac{10}{3}\right) + 50$

$N\left(\frac{10}{3}\right) = 346$ personas.

(5) $I_m = 200 \cdot q^{-\frac{1}{2}} \left(\frac{USD}{UN}\right) \Rightarrow I = \int I_m \, dq = 200 \cdot 2 \cdot q^{\frac{1}{2}} + I_0$.

$C_m = \frac{q}{2} + 10 \left(\frac{USD}{UN}\right) \Rightarrow C = \int C_m \, dq = \frac{1}{2} \cdot \frac{1}{2} q^2 + 10q + C_0$.

$$I = 400 \cdot q^{1/2} + I_0 \qquad C = \frac{1}{4} \cdot q^2 + 10q + C_0$$

$$\boxed{U = I - C}$$

$$2000 = \left[400 \cdot 25^{1/2} + I_0\right] - \left[\frac{1}{4} \cdot 25^2 + 10 \cdot 25 + C_0\right].$$

$$2000 = \left[400 \cdot 5 + I_0\right] - \left[\frac{1}{4} \cdot 625 + 250 + C_0\right]$$

$$2000 = 2000 + I_0 - \frac{625}{4} - 250 - C_0$$

$$I_0 - C_0 = \frac{625}{4} + 250 = \frac{1625}{4} \Rightarrow \boxed{I_0 - C_0 = \frac{1625}{4}}$$

evaluan.

$$U(36) = 400 \cdot \sqrt{36} - \frac{1}{4} \cdot 36^2 - 10 \cdot 36 + \frac{1625}{4}$$

$$U(36) = 2400 - 324 - 360 + \frac{1625}{4}$$

$$U(36) = 2122{,}25$$