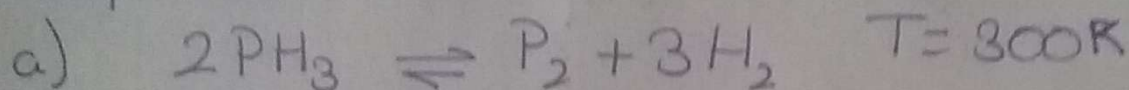


Ejercicio N° 20.-



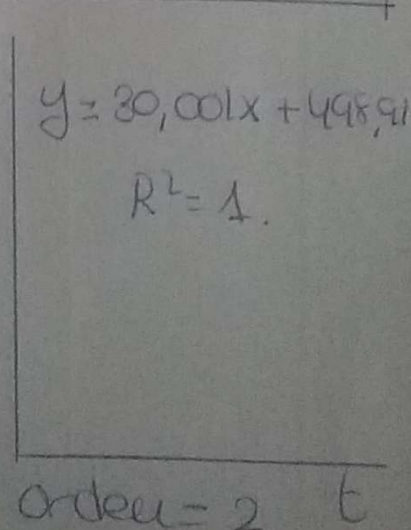
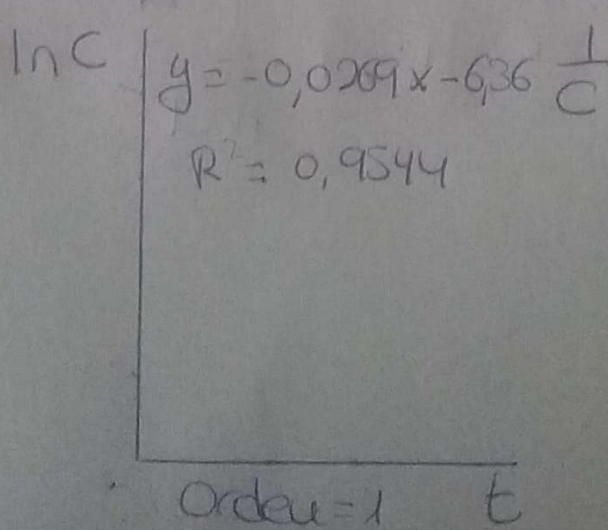
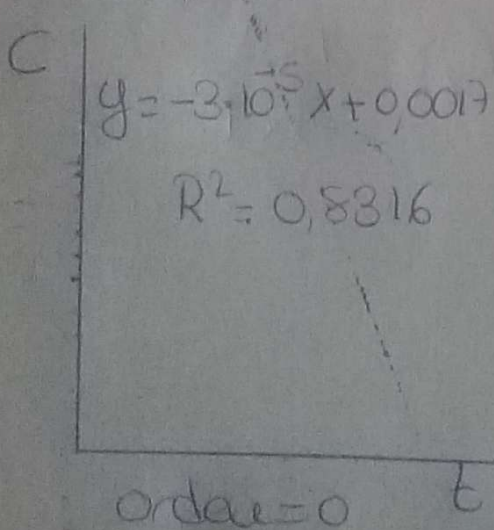
inic.	P_0	—	—	$P_T = \sum P_i = P_0 - 2P + P + 3P$
reac.	$-2P$	P	$3P$	$P_T = P_0 + 2P \rightarrow 2P = P_T - P_0$
fin	$P_0 - 2P$	P	$3P$	

$$P_f(\text{PH}_3) = P_0 - 2P = P_0 - (P_T - P_0) = 2P_0 - P_T$$

t (min)	0	10	20	30	50
P_0 (atm)	0,0492	0,0492	0,0492	0,0492	0,0492
P_T (atm)	0,0492	0,0676	0,0760	0,0808	0,0861
P_f (atm)	0,0492	0,0308	0,0224	0,0176	0,0123

$$P \cdot V = nRT \Rightarrow P = \frac{n}{V} RT = [C]RT \rightarrow C = \frac{P}{RT}$$

$C_f(\text{PH}_3)$	0,002	0,00125	0,00091	0,00072	0,0005
--------------------	-------	---------	---------	---------	--------



Tenemos una cinética de orden 2.-

$$-\frac{d[A]}{dt} = k \cdot [A]^2 \Rightarrow -\frac{d[A]}{[A]^2} = k \cdot dt \Rightarrow$$

$$\Rightarrow -\int_0^t \frac{d[A]}{[A]^2} = k \cdot \int_0^t dt \Rightarrow \frac{1}{[A]_f} - \frac{1}{[A]_0} = k \cdot t$$

$$\frac{1}{[A]_f} = \frac{1}{[A]_0} + k \cdot t$$

$$y = 30,001x + 498,91$$

$$\left\{ \begin{array}{l} K = 30,001 \frac{L}{mol \cdot min^{-1}} \end{array} \right.$$

b) Ec. Arrhenius: $K = A \cdot e^{-E_a/RT}$

$$\ln K = \ln A - \frac{E_a}{RT}$$

$$\ln K_1 = \ln A - \frac{E_a}{RT_1}$$

$$\ln K_2 = \ln A - \frac{E_a}{RT_2}$$

$$\left. \begin{array}{l} \ln K_1 = \ln A - \frac{E_a}{RT_1} \\ \ln K_2 = \ln A - \frac{E_a}{RT_2} \end{array} \right\} \ln \frac{K_1}{K_2} = \frac{E_a}{R} \left[\frac{1}{T_2} - \frac{1}{T_1} \right]$$

$$\ln \frac{30,001}{90} = \frac{E_a}{8,31} \cdot \left[\frac{1}{500} - \frac{1}{300} \right]$$

$$E_a = 6846,9 \frac{J}{mol} = 6,85 \frac{kJ}{mol}$$