

Ex 4 : Décomposition du pentaoxyde de diazote

$$1^{\circ} v = k [N_2O_5]$$

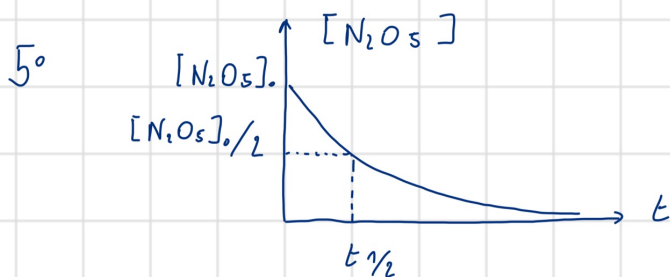
↑
mol L⁻¹ s⁻¹ s⁻¹ mol L⁻¹

$$+ \frac{1}{1/2} \frac{d[O_2]}{dt}$$

$$2^{\circ} v = - \frac{d[N_2O_5]}{dt} = + \frac{d[NO_2]}{dt} = + 2 \frac{d[O_2]}{dt}$$

$$3^{\circ} \frac{d[N_2O_5]}{dt} + k [N_2O_5] = 0$$

$$4^{\circ} [N_2O_5](t) = [N_2O_5]_0 e^{-kt}$$



$$6^{\circ} [N_2O_5](t_{1/2}) = [N_2O_5]_0 e^{-kt_{1/2}}$$

$$\frac{[N_2O_5]_0}{2} = [N_2O_5]_0 e^{-kt_{1/2}}$$

$$\frac{1}{2} = e^{-kt_{1/2}}$$

$$- \ln \frac{1}{2} = kt_{1/2}$$

$$t_{1/2} = \frac{\ln 2}{k}$$

7^o $t_{1/2}$ indépendant de $[N_2O_5]_0$ → ordre 1