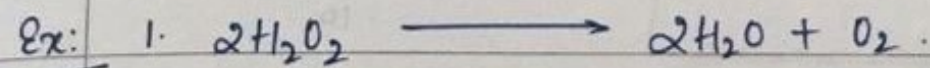
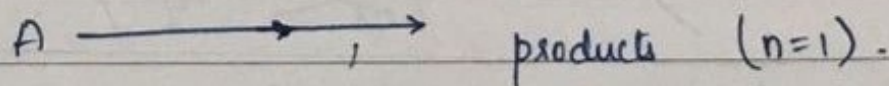


(B) $n=1$:-



3. Radioactive disintegration.



$t=0$ $[A]_0 = a$

$t=t$ $[A]_t = a-x$

$$k = \frac{2.303}{t} \log \frac{[A]_0}{[A]_t} = \frac{2.303}{t} \log \left(\frac{a}{a-x} \right)$$

If $t = t_{1/2}$,
 $[A]_t = [A]_{0/2}$

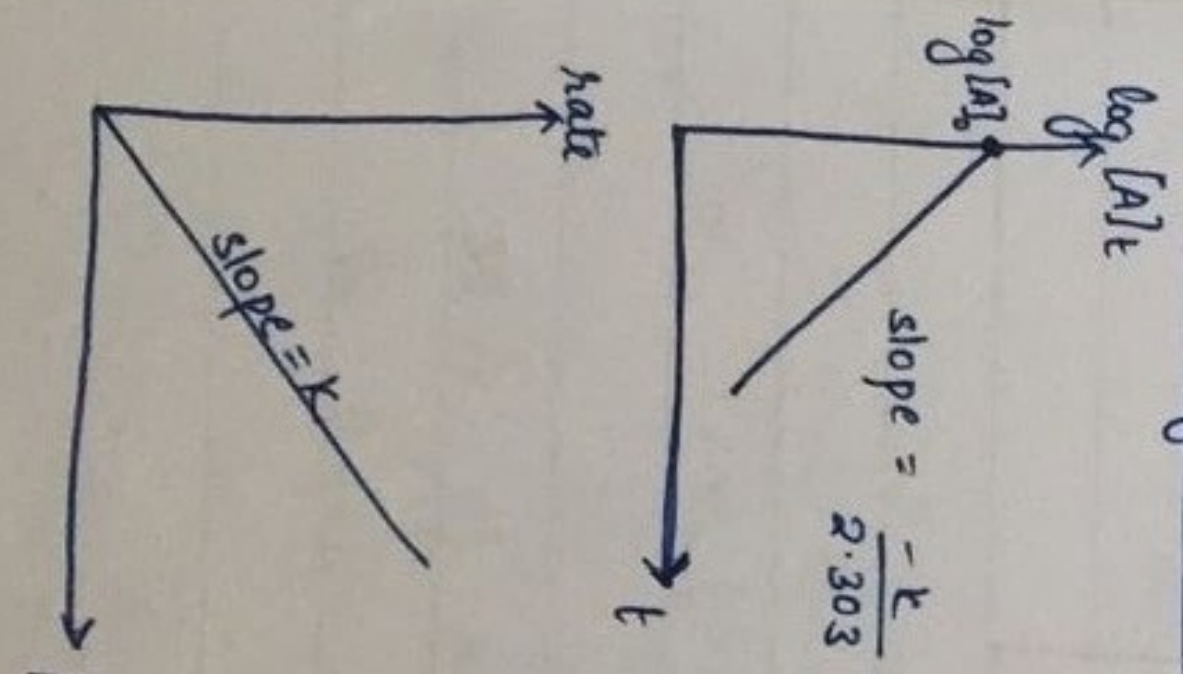
$$k = \frac{2.303}{t_{1/2}} \log \frac{[A]_0}{[A]_{0/2}}$$

$$k = \frac{2.303 \log 2}{t_{1/2}}$$

$$t_{1/2} = \frac{0.693}{k}$$

* $t_{1/2}$ is independent of $[A]_0$.

→ For first order:



rate = $k[A]_t$

$$k = \frac{2.303}{t} \log \frac{[A]_0}{[A]_t} = \frac{2.303}{t} [\log A_0 - \log A_t]$$

$$\log [A]_t = \frac{-kt}{2.303} + \log [A]_0$$

