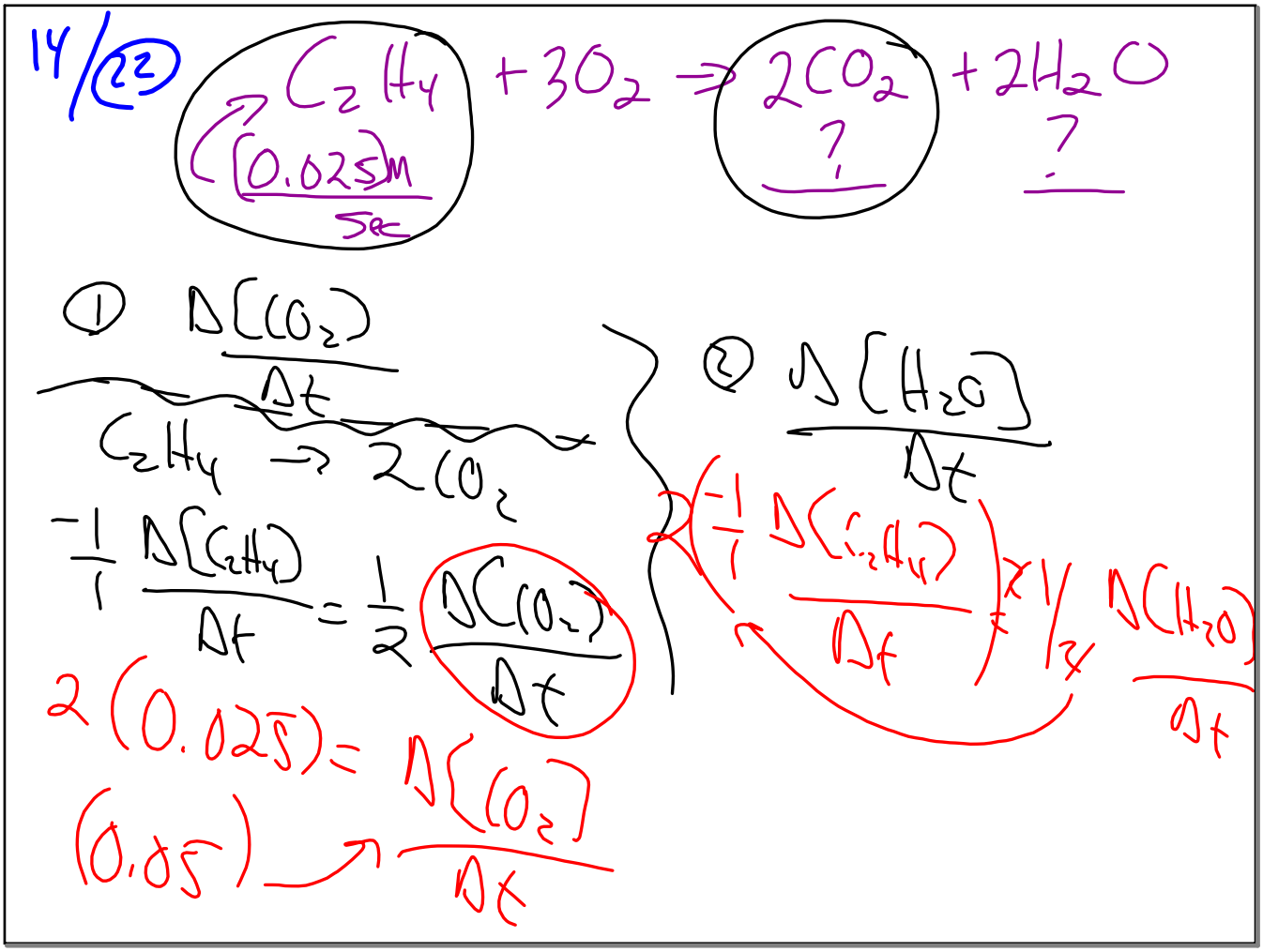
14/16 $\_A \rightarrow \_B$ 1 : 1 mole ratio

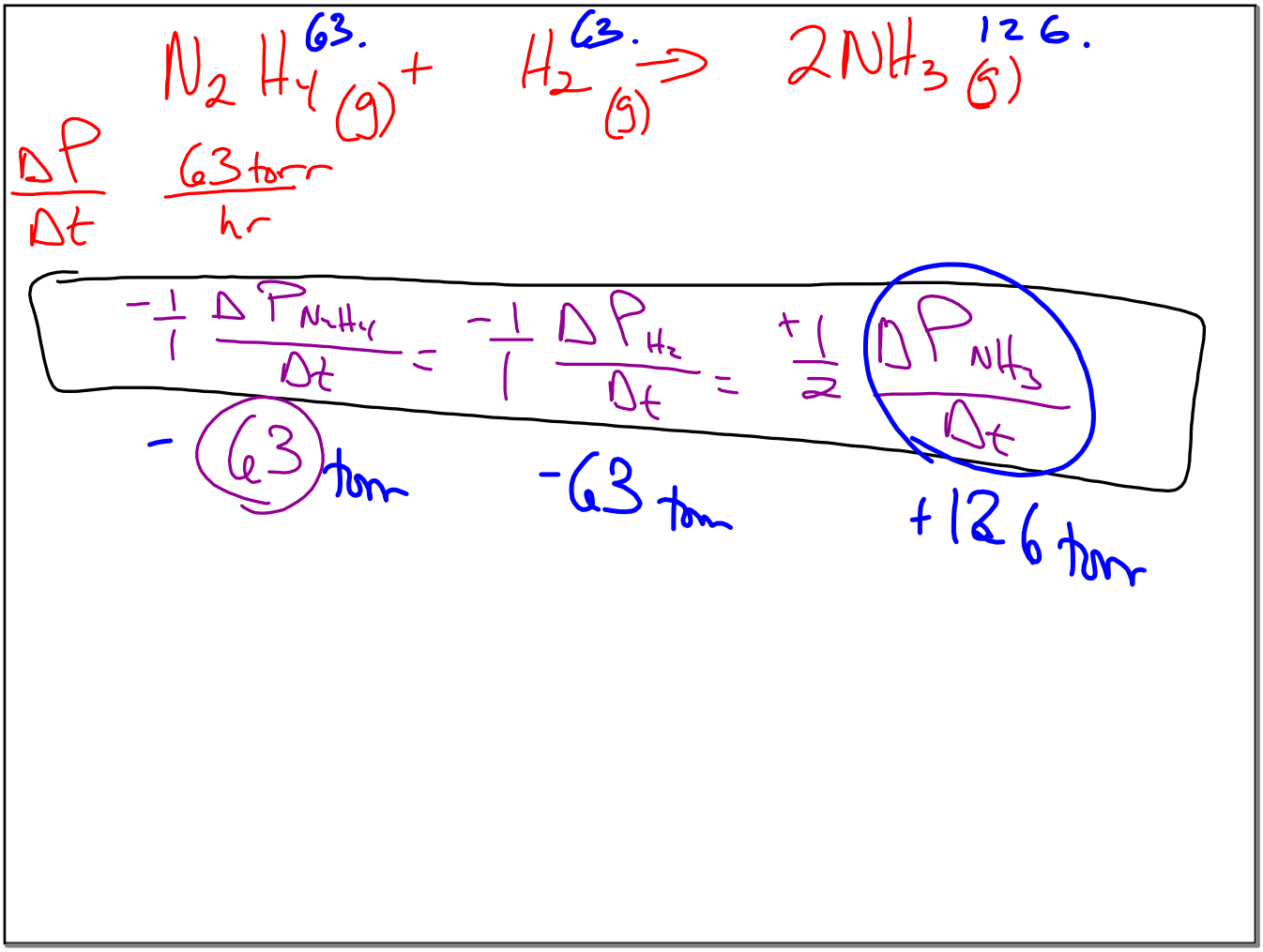
t-0 0.1 0

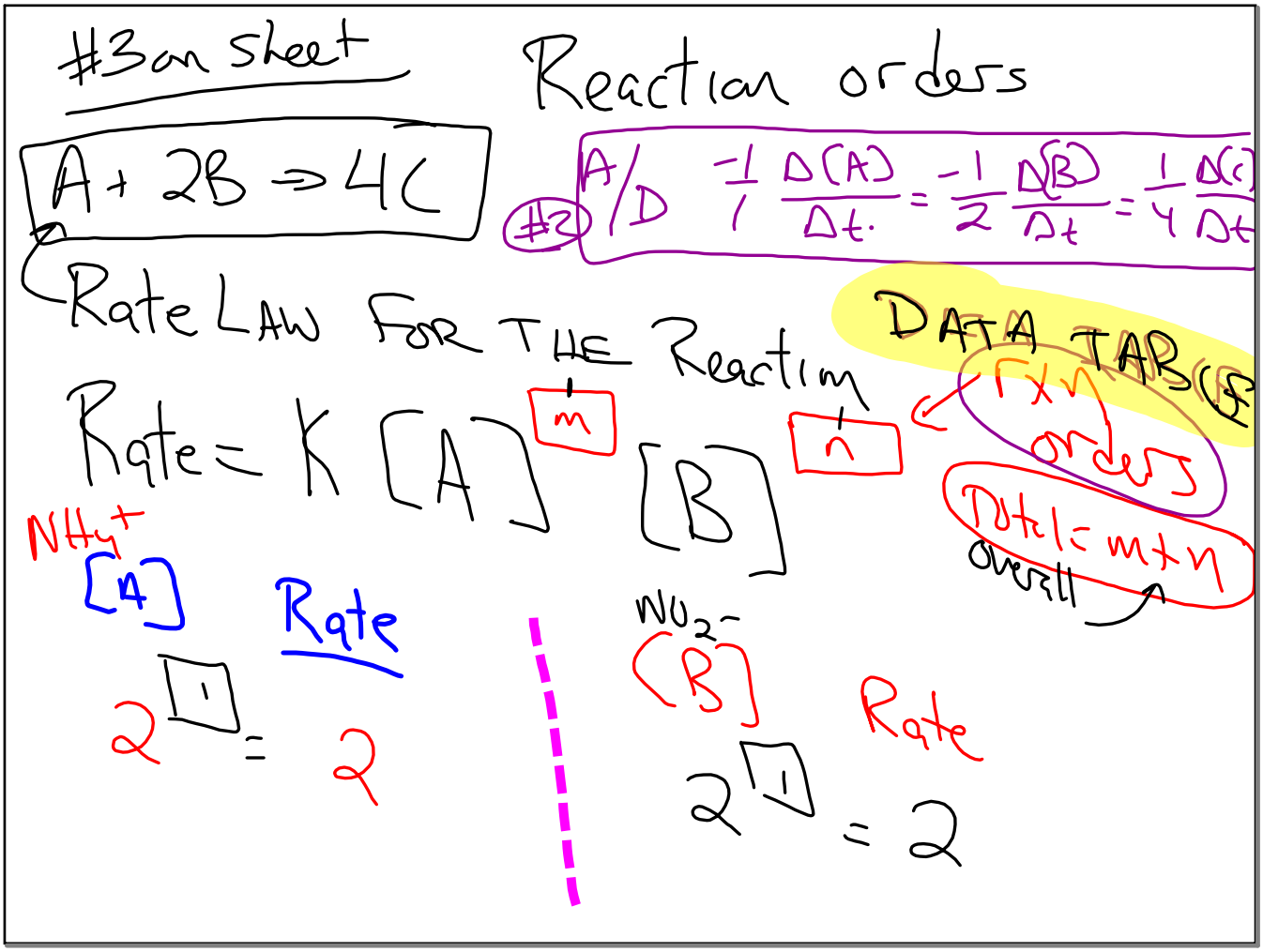
0.033 ↓ 0.067 → 0.033 ↑ 0.033

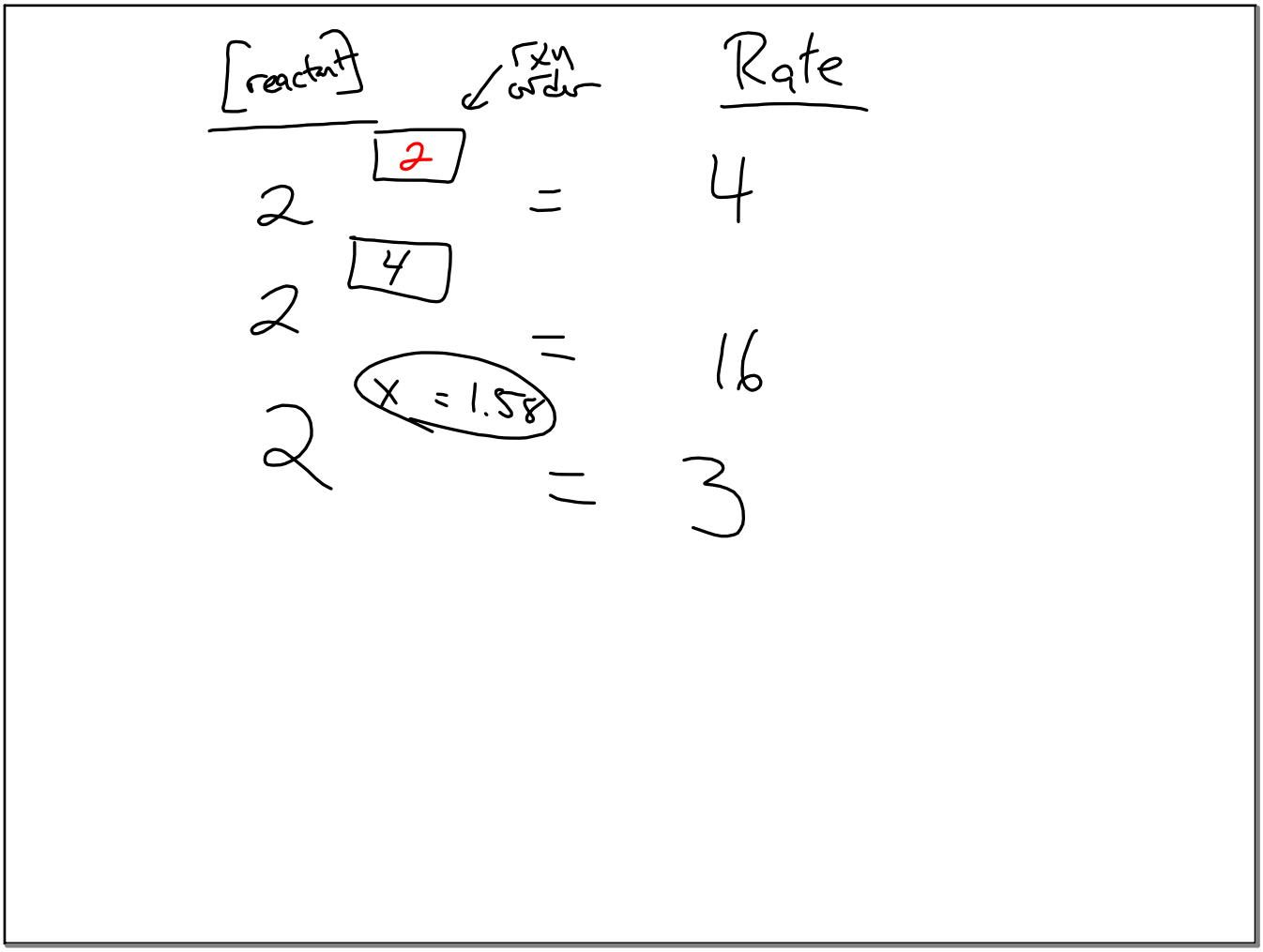
$$-\frac{\Delta[A]}{\Delta t} = +\frac{\Delta[B]}{\Delta t}$$

Feb 3-7:38 AM


14/22
C2H4 + 3O2 ⇒ 2CO2 + 2H2O
0.025M
5s
?
?
① Δ[O2]/Δt
C2H4 → 2O2
-1/1 Δ[C2H4]/Δt = 1/2 Δ[O2]/Δt
2(0.025) = Δ[O2]/Δt
(0.05)
② Δ[H2O]/Δt
-1/1 Δ[C2H4]/Δt x 1/2
Δ[H2O]/Δt


N_2H_4 63. (g) + H_2 63. (g) → $2NH_3$ 126. (g)
$\frac{\Delta P}{\Delta t}$ $\frac{63\ torr}{hr}$
$-\frac{1}{1}\frac{\Delta P_{N_2H_4}}{\Delta t} = -\frac{1}{1}\frac{\Delta P_{H_2}}{\Delta t} = +\frac{1}{2}\frac{\Delta P_{NH_3}}{\Delta t}$
$-63\ torr$
$-63\ torr$
$+126\ torr$


#3 on sheet
Reaction orders
A + 2B ⇒ 4C
#3
A/D
Δ[A]/Δt
Δ[B]/Δt
Δ[C]/Δt
Rate Law For The Reaction
Rate = K [A]^m [B]^n
DATA TABLES
rxn orders
Total = m+n
overall
NH4+
[A]
Rate
2^1 = 2
NO2-
[B]
Rate
2^1 = 2



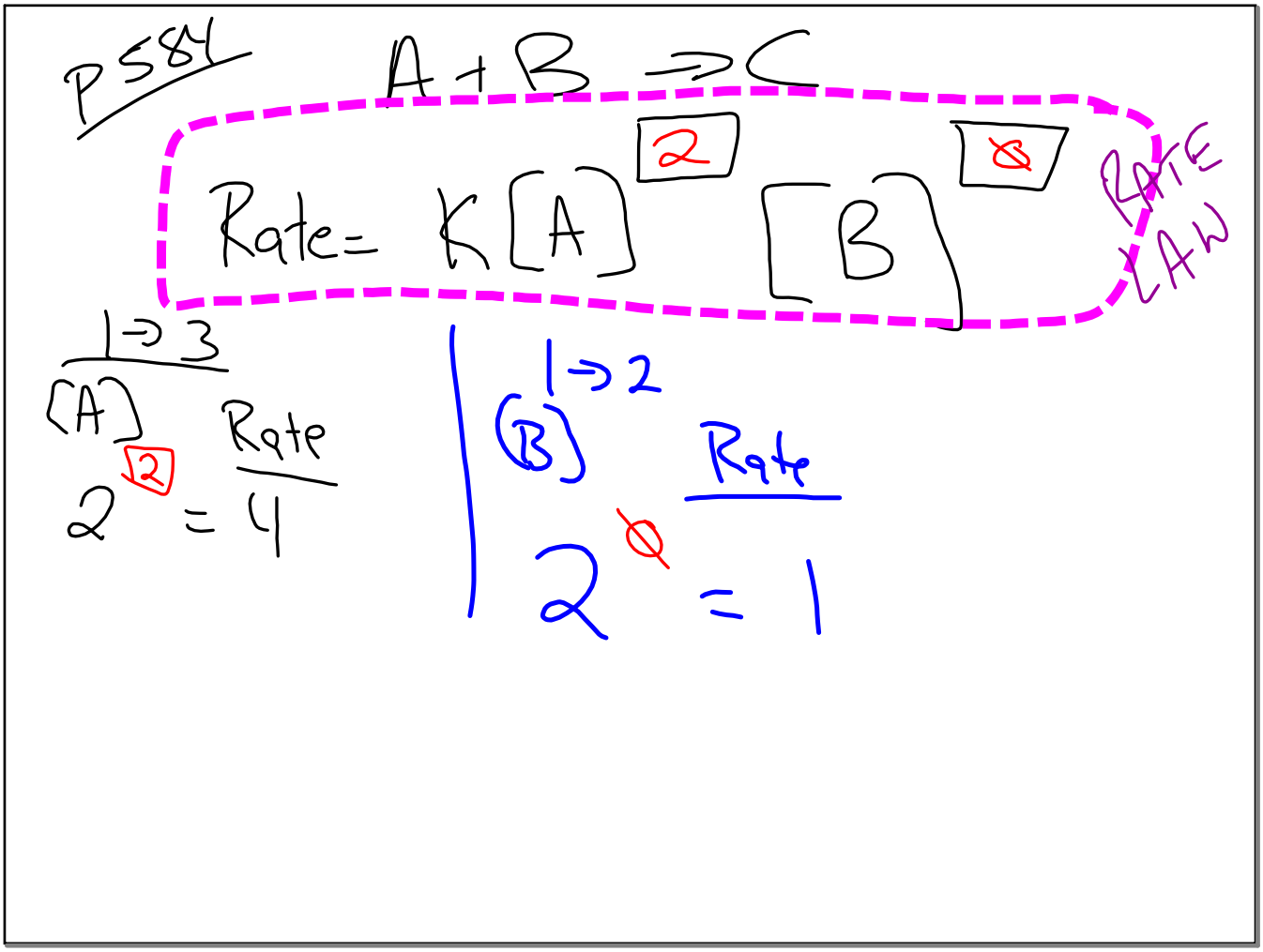
Feb 3-8:21 AM

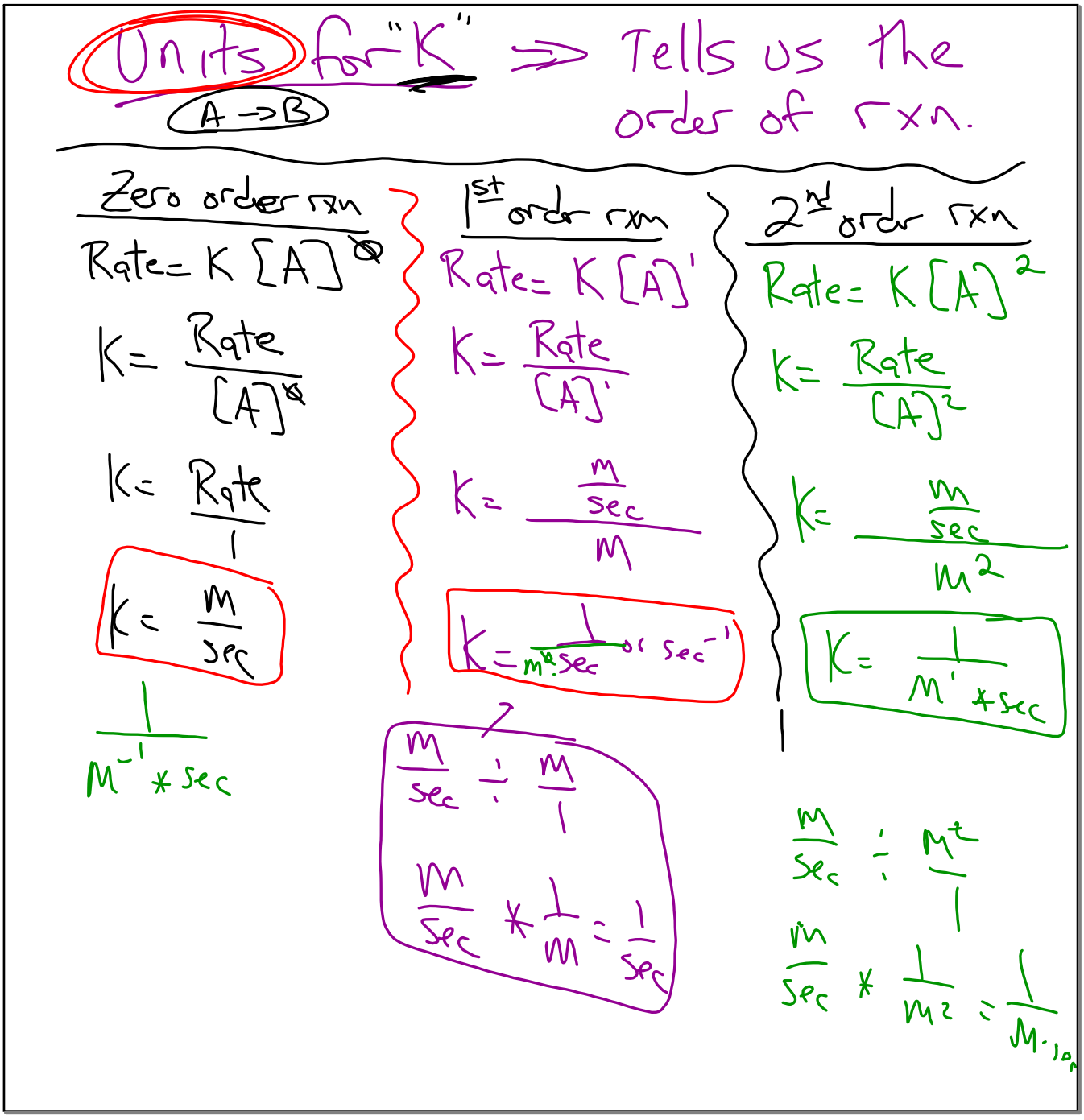
$$2^x = 3$$

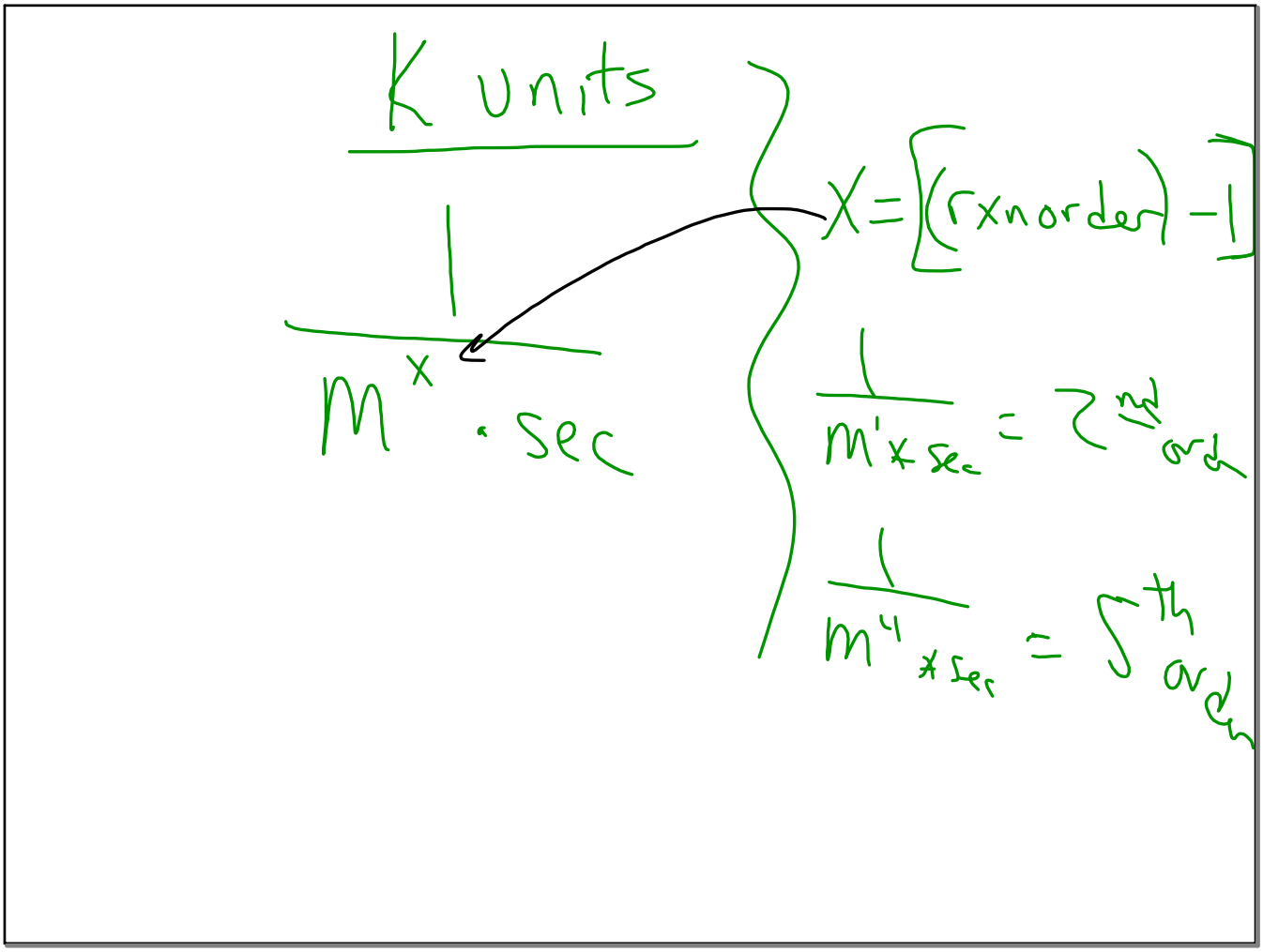
$$\log 2^x = \log 3$$

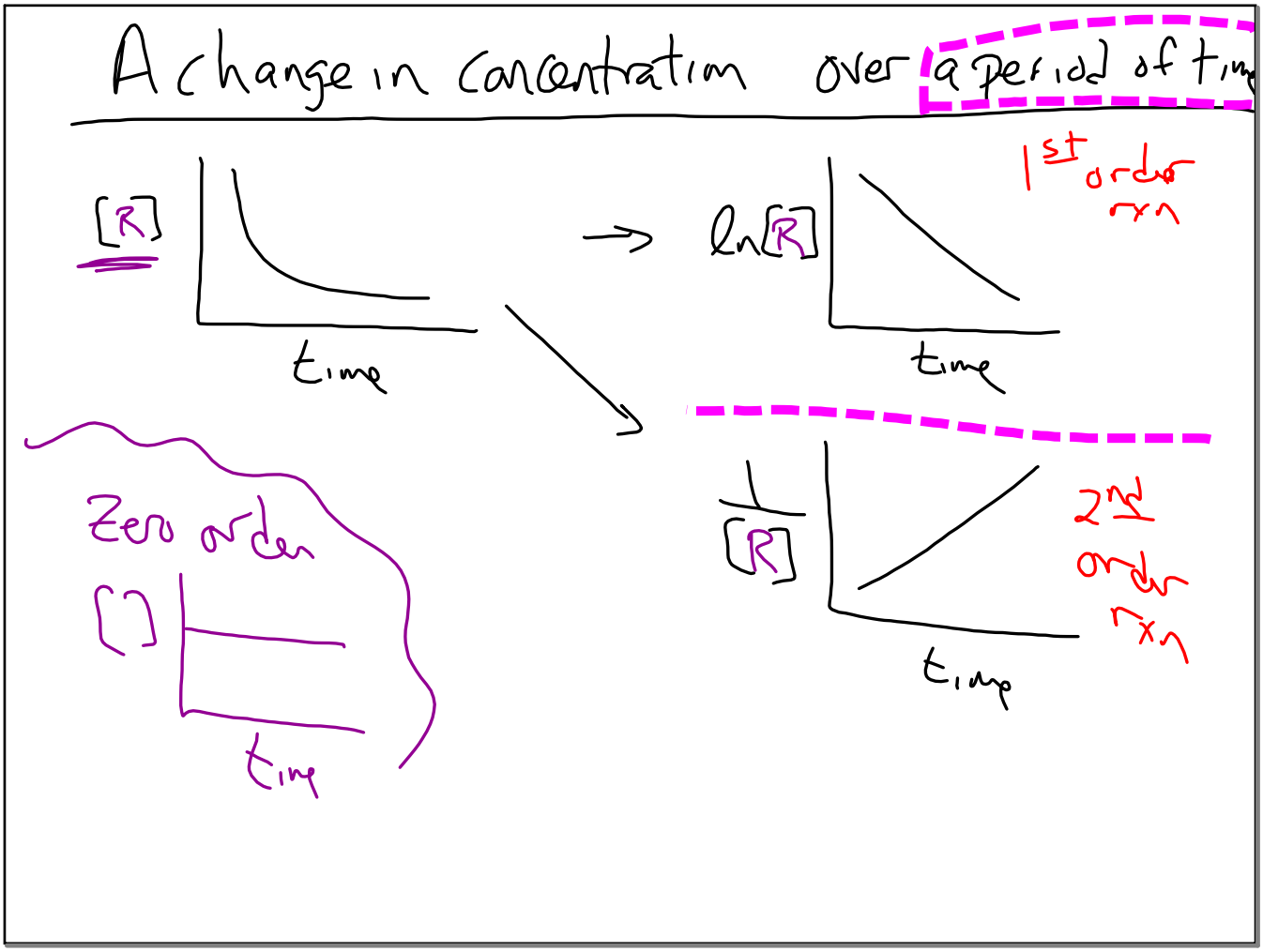
$$x \frac{\cancel{\log 2}}{\cancel{\log 2}} = \frac{\log 3}{\log 2}$$

$$x = 1,58$$


P584
A + B ⇒ C
Rate = K [A]^2 [B]^0
RATE LAW
1 → 3
[A]^2
Rate
2^2 = 4
1 → 2
[B]^0
Rate
2^0 = 1

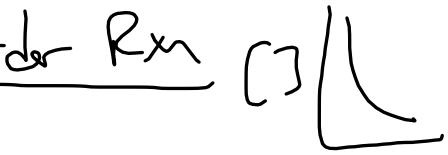

Units for "K" ⇒ Tells us the order of rxn.
A → B
Zero order rxn
Rate = K [A]^0
K = Rate / [A]^0
K = Rate / 1
K = M / sec
1 / M^-1 * sec
1st order rxn
Rate = K [A]^1
K = Rate / [A]^1
K = (M/sec) / M
K = 1 / sec or sec^-1
M/sec ÷ M/1
M/sec * 1/M = 1/sec
2nd order rxn
Rate = K [A]^2
K = Rate / [A]^2
K = (M/sec) / M^2
K = 1 / M^-1 * sec
M/sec ÷ M^2/1
M/sec * 1/M^2 = 1/M^-1 sec

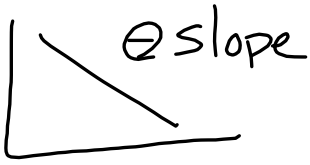

K units
1
$M^x \cdot sec$
$x = [(rxn\ order) - 1]$
$\frac{1}{M^1 \times sec} = 2^{nd}\ order$
$\frac{1}{M^4 \times sec} = 5^{th}\ order$


A change in concentration over a period of time
[R]
time
ln[R]
time
1st order rxn
Zero order
[ ]
time
1/[R]
time
2nd order rxn

Feb 3-9:03 AM

First order Rxn [ ] → ln



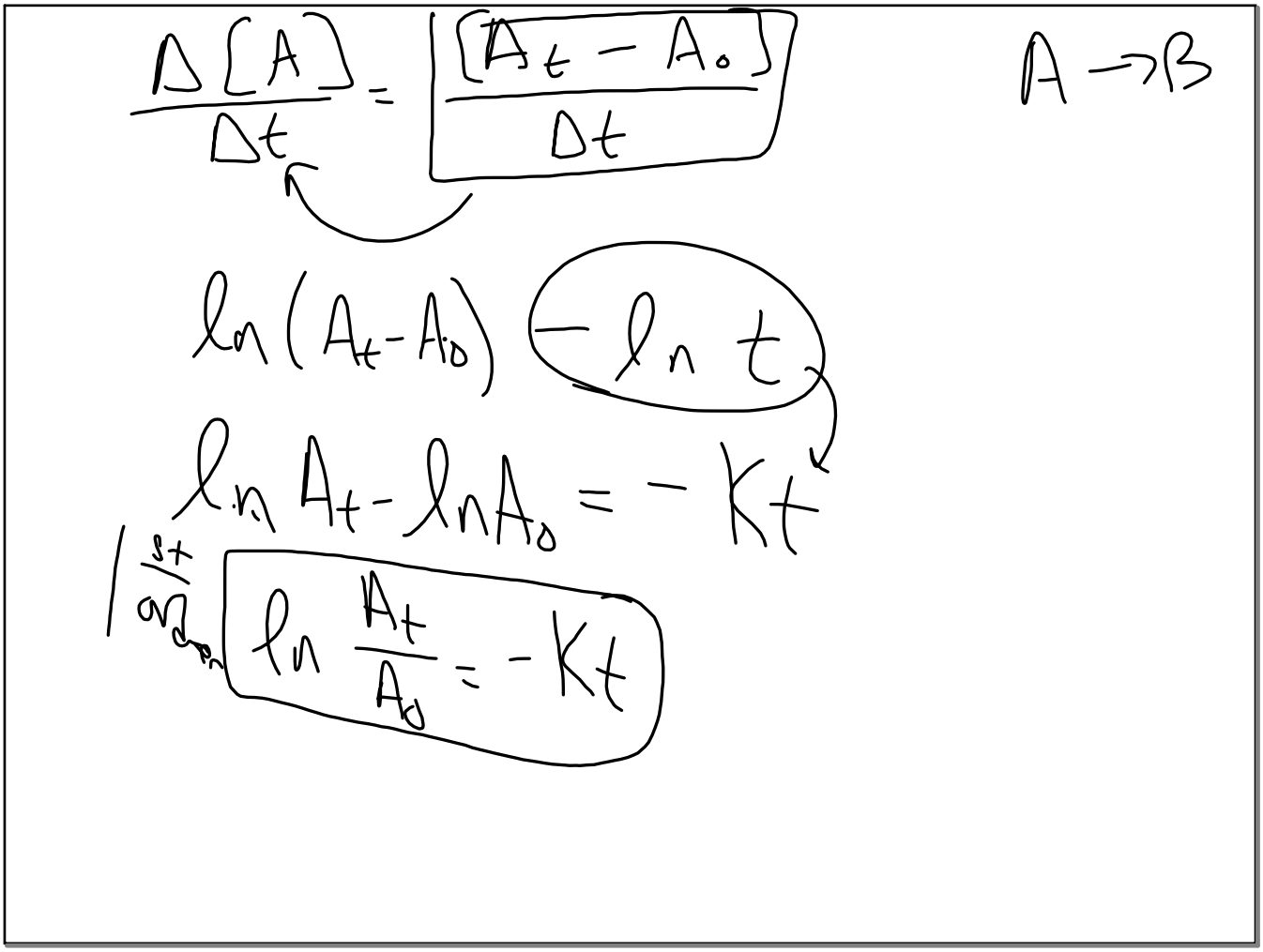


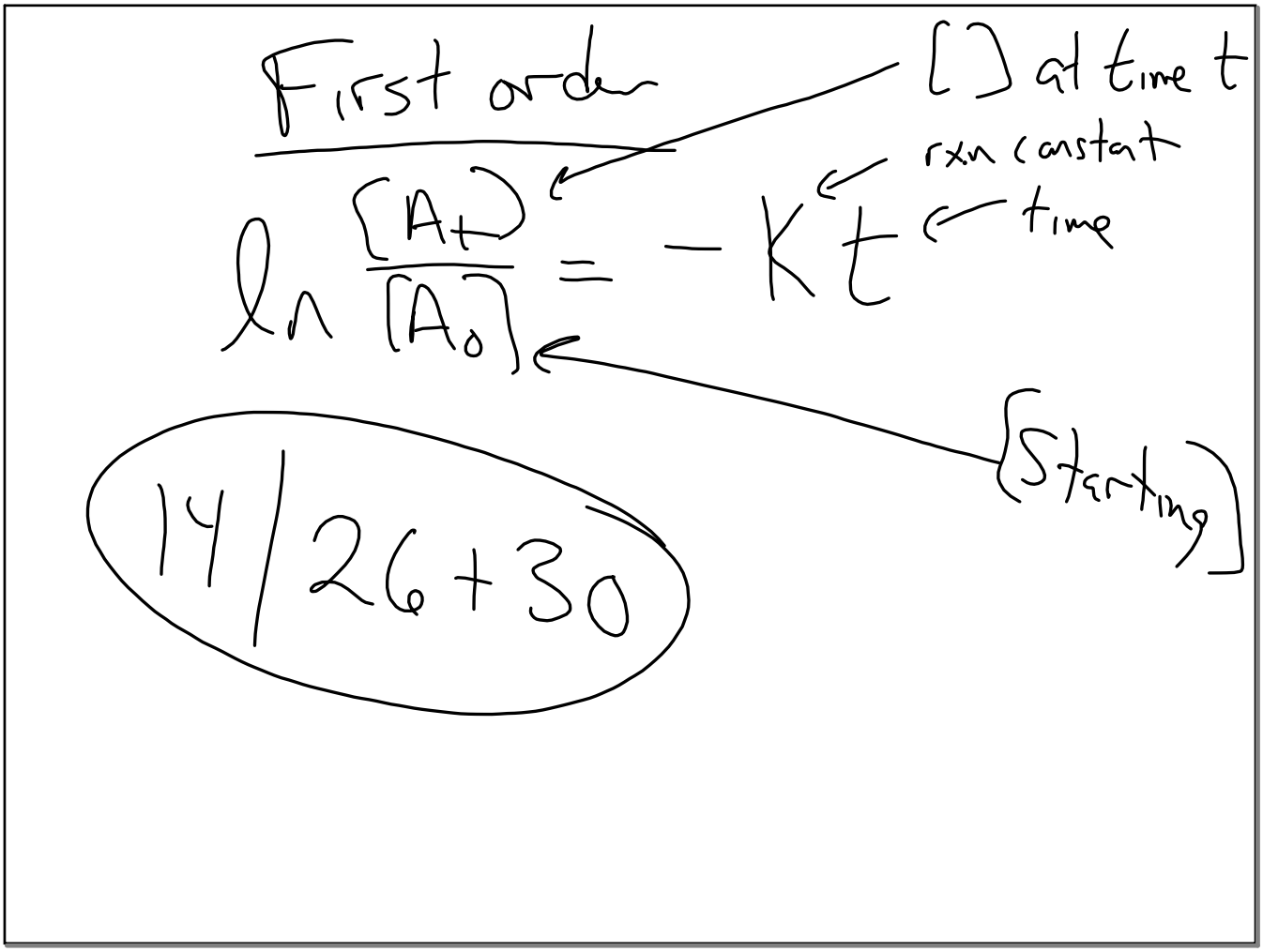
$[A_0]$ = time 0

$[A_t]$ = time "t" over a period of time

$$\text{Rate} = \frac{\Delta(A)}{\Delta t} = K[A]^1$$

Feb 3-9:07 AM


$\frac{\Delta[A]}{\Delta t} = \frac{[A_t - A_0]}{\Delta t}$
A → B
$\ln(A_t - A_0)$ $-\ln t$
$\ln A_t - \ln A_0 = -kt$
$\frac{1}{\text{slope}}$
$\ln \frac{A_t}{A_0} = -kt$


First order
[ ] at time t
rxn constat
time
$\ln \frac{[A_t]}{[A_0]} = -kt$
[Starting]
14/26+30