3.9	$-\ln\left(\frac{1-x_A}{x_{RC}}\right) = \left(k_1+k_2\right)E.$
	$t_0 \omega$ ? $k_1 = M + x_{Ae} = C_{Re}$ $k_2 = 1 - x_{Ae}$ $c_{Ae}$
	$K_2 = \left(\frac{1 - \chi_{Ae}}{m + \chi_{Ae}}\right) K_1$
	$K_{1}+K_{2} = K, \begin{bmatrix} 1 + 1-x_{Ae} \\ TN+x_{Ae} \end{bmatrix}$ $= K, \begin{bmatrix} M+1 \\ TN+x_{Ae} \end{bmatrix}.$
and the second	Rev Rate equation
	$-\ln\left(\frac{1-\frac{xA}{xAe}}{\frac{1}{xAe}}\right) = \left(\frac{M+1}{M+xAe}\right)^{k},  x \in \mathbb{R}$
	$\frac{\kappa_1\left(\frac{m+1}{m+x_{Ae}}\right) = \kappa_1 + \kappa_2}{m+x_{Ae}}.$
	$-\ln\left(\frac{1-\chi_A}{\chi_{Ae}}\right) = (\kappa_1 + \kappa_2) \epsilon$
	t = 8 mins for xa = y2, xae = 2/2

wogenoodEntented	- Pag (1- Y3) - (1x + x-) e
resilient specifica-	$-en\left(1-\frac{y_3}{2y_3}\right)=\left(k_1+k_2\right)$
Australian de la companya de la comp	$K_1 + K_2 = \ln^2 = 0.086625 \text{ min}^{-1} - 0$
	$K_1 = \frac{(Re = \frac{C_{AO} \times Ae}{E_{AO}(1 - \times Ae)} = 0.5 \times \frac{2}{3}}{K_2} = 2$
	( K, = 2 K2 - 2)
proditive followed from the control of the control	Solving () and (2) $K_1 = 0.0577, K_2 = 0.028875$
pyderminiae diawani y maniferia	$- \Lambda_A = K_1 C_A - K_2 C_R$
	= 0.05775 CA - 0.028875 CR.
3.11	
B-2-C-2-C-2-C-2-C-2-C-2-C-2-C-2-C-2-C-2-	(AD = 500
and the second s	From table if (0, =500 to = 100 min)  : For 5 lus: t = 100 + 300 = 400 min
And the state of t	$\frac{1}{12} \times A = 1 - CA = 1 - 200 = 0.6$ $\frac{1}{12} \times A = 1 - 200 = 0.6$
	Pl
	Put graph, find k, then find CA. Then find XA.

3.15	
	-la = K3 CA CEO CA + M.
	- dea = k3 CGO. CA de (CA+M)
	- dCA (CA+M) = K3 CEO dt.
Total Control of Contr	Integrating on both sides
the state of the s	-dCA[1+m] = K3 CEO dt
	(CAO-CA) + M ln cA = k3 CEO E
	$\frac{1}{m} + \frac{c_{AO}}{c_{AO}-c_{A}} = k_3 C_{EO} \left(\frac{\epsilon}{c_{AO}-c_{A}}\right)$
Commission of American	Plot graph ln CA Vs t  CAO-CA CAO-CA
	Slope = K3 CEO
	intercept = -/In
	K3 = 19.7 G2
	m = 0.197 mmol lit

3.18	- 2A = 200 CACGO => K3 = 200.
	2+CA M= 2.
	Cc. = 0.001 mol/lit
	(CAO-CA) + TM ln CA = K3 CEO t
	FOR CA = 0.025 molluit & CAO = 10 molluit
Section 1	
	10-0:025)+2 ln (0:025) = 200 × 0:001 x t
	9.975 + 11.9829 = 0.2xt.
	21.9579 = 6
Per citizana e Caracina de Car	0. 2
To a contract of the contract	E = 109. 7895 min
5.	
(	E = 109. 7895 min
0	$E = 109.7895 min$ $C = Co e^{-kt} or C = e^{-kt}$ $C = \frac{1}{k} On(\frac{Co}{c})$
0~	$t = 109.7895 min$ $2 = Co e^{-kt} or \frac{C}{Co} = e^{-kt}$ $-t = \frac{1}{k} On(\frac{Co}{C})$

## **Solution:**

First order reaction, 
$$\ln(\text{Co/C}) = k*t$$
 or  $k = 1/t*\ln(\text{Co/C})$  or  $t = (1/k)*\ln(\text{Co/C})$  At 298 K (T<sub>1</sub>),  $k_1 = 1/(300*24*60)*\ln(2) = 1.6045 \times 10^{-6}$  min<sup>-1</sup>. Using the Arrhenius equation for temperature dependency, 
$$\ln(k_2/k_1) = E/R*[1/T_1 - 1/T_2]$$
 or  $k_2 = k_1*\exp(E/R*[1/T_1 - 1/T_2])$  where  $T_2 = 523$  K,  $E=60,000$  J/mol,  $R=8.314$  J/mol-K

Plugging in values for the terms on the right hand side of the above equation,

$$k_2 = 0.0537 \text{ min}^{-1}$$

From the 1st order rate equation,

$$C/Co = exp(-k_2*t)$$

Plugging in  $k_2$  and t=30 min., C/Co = 0.1996 so approximately 80% of the initial aspartame is lost after baking for 30 minutes.