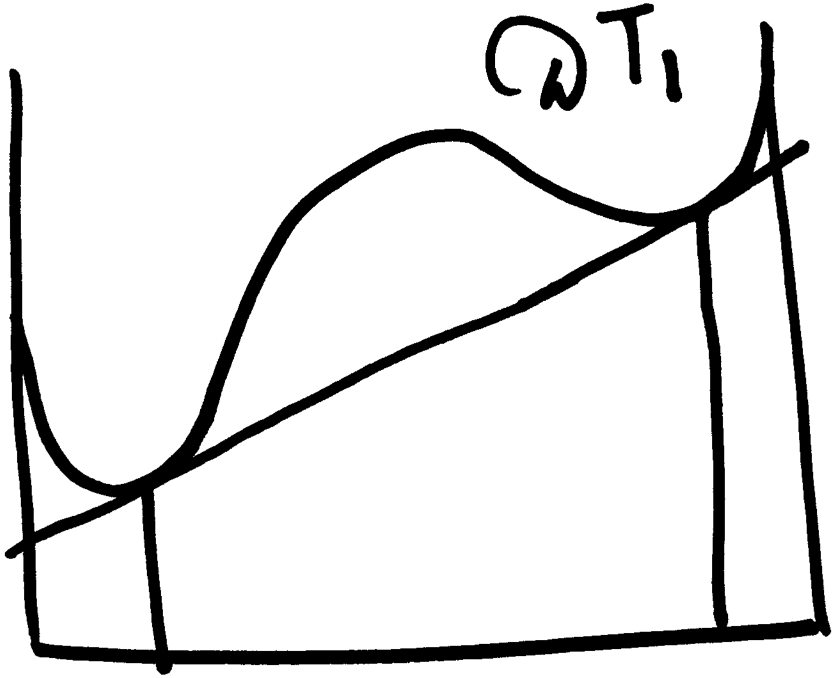
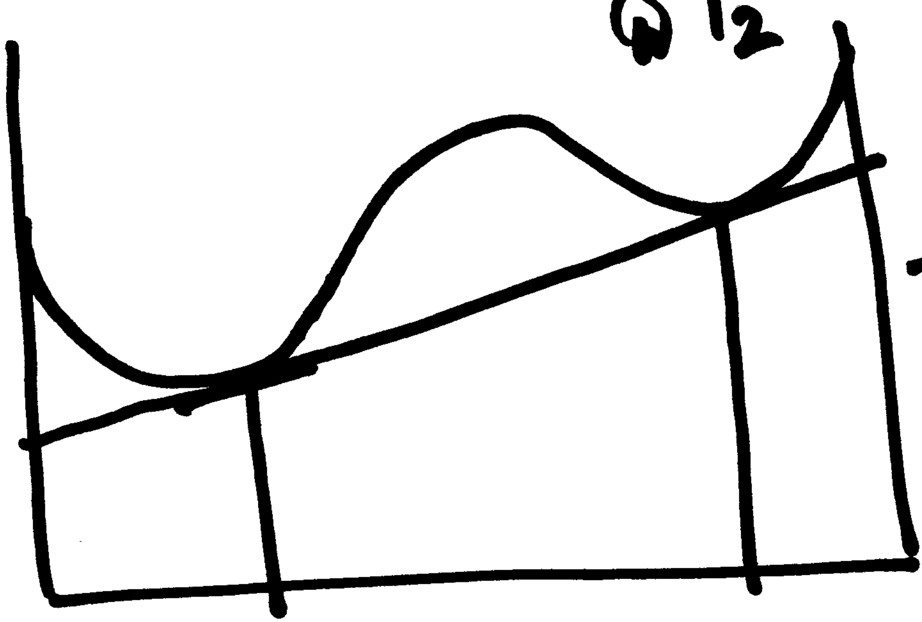
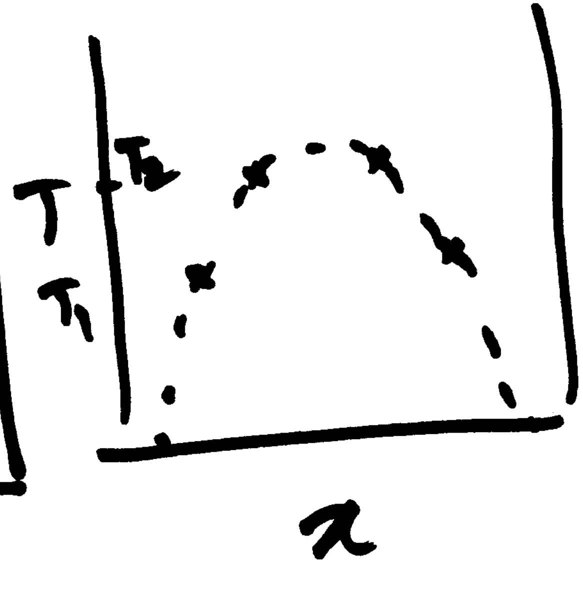
Prof. M.A.G. [illegible]

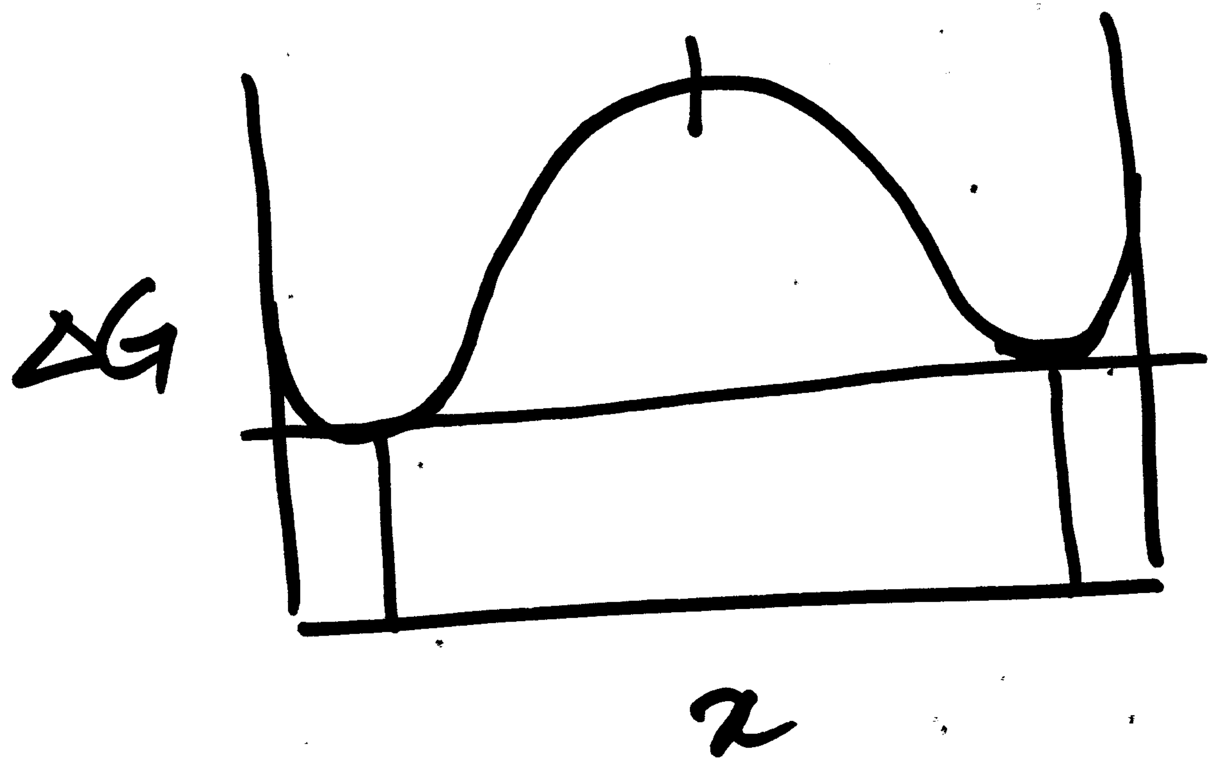
Lec. [illegible] 23 [illegible]



$T_2 > T_1$







$$DG = \frac{\Delta G}{RT} = \alpha\, x(1-x) + x\ln x + (1-x)\ln(1-x)$$

$$\alpha \downarrow \frac{\Omega}{RT}$$

$$DG = \frac{\Delta G}{RT} = \alpha(x)(1-x) + x\ln x + (1-x)\ln(1-x)$$

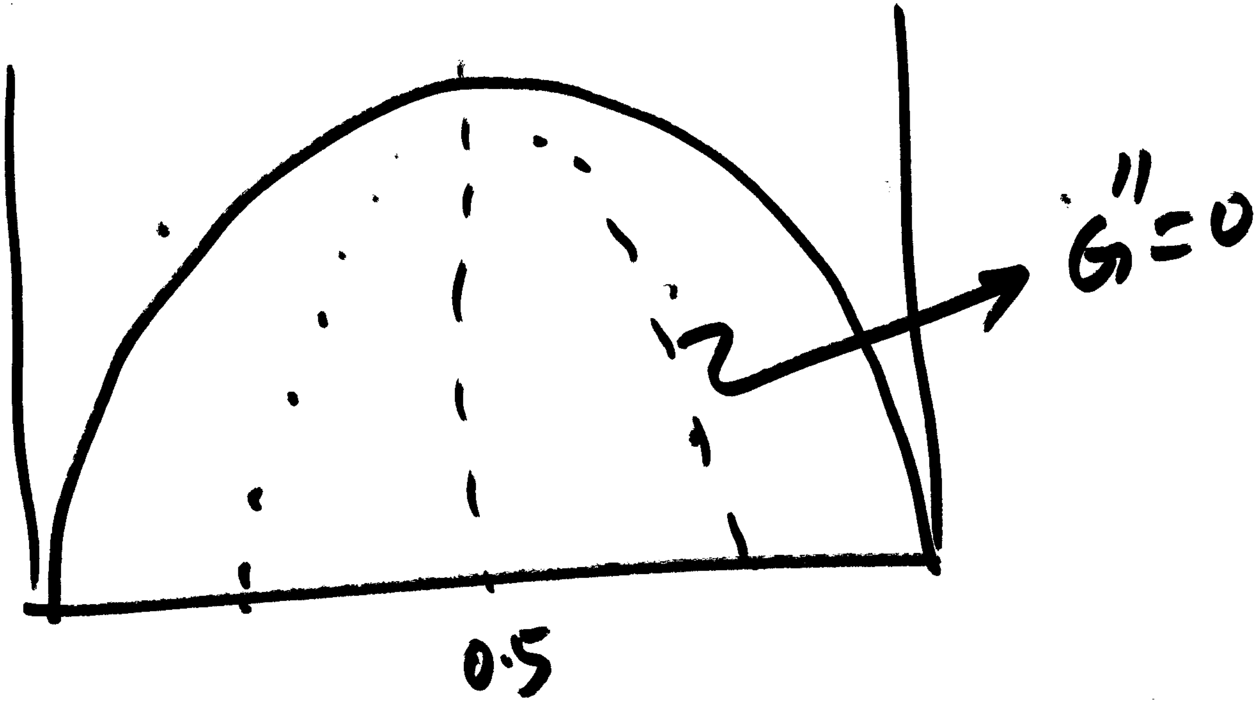
$$\frac{\partial}{\partial x}(DG) = DG' = \alpha(1-x) - \alpha x + \cancel{x}\frac{1}{\cancel{x}} + \ln x - \ln(1-x) - \cancel{(1-x)}\frac{1}{\cancel{(1-x)}}$$

$$= \alpha - 2\alpha x + \ln\left(\frac{x}{1-x}\right)$$

$$\frac{\partial}{\partial x}(DG') = DG'' = -2\alpha + \frac{1-x}{x}\left[\frac{1}{1-x} + \frac{x}{(1-x)^2}\right]$$

$$= -2\alpha + \frac{1}{x} + \frac{1}{1-x}$$

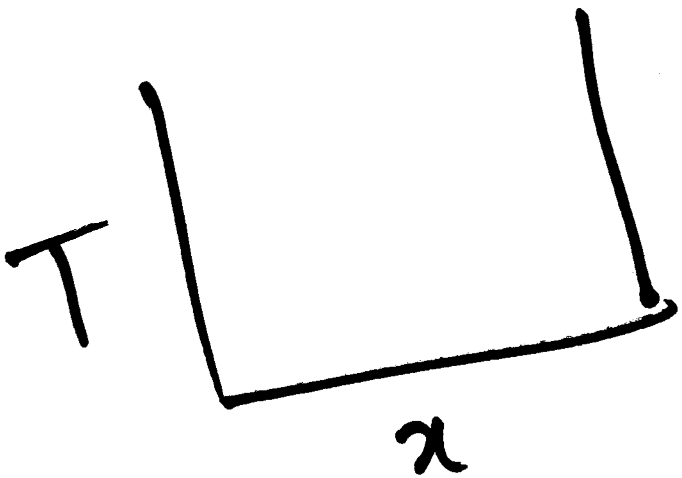
$$G'' = \frac{\partial^2 \left(\frac{\Delta G}{RT}\right)}{\partial x^2} = -2\alpha + \frac{1}{x} + \frac{1}{1-x} = 0$$



Function $\rightarrow \Delta G$ .. Define.

$\alpha \rightarrow$ Vary. $\qquad \alpha = \dfrac{\Omega}{RT}$.

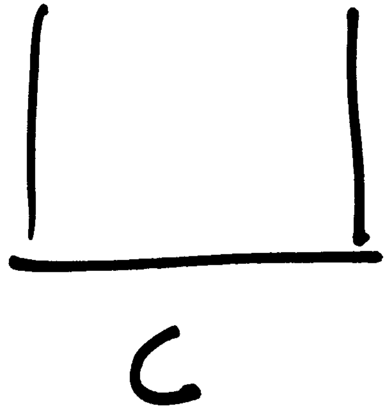
$T \Rightarrow$ Varied.

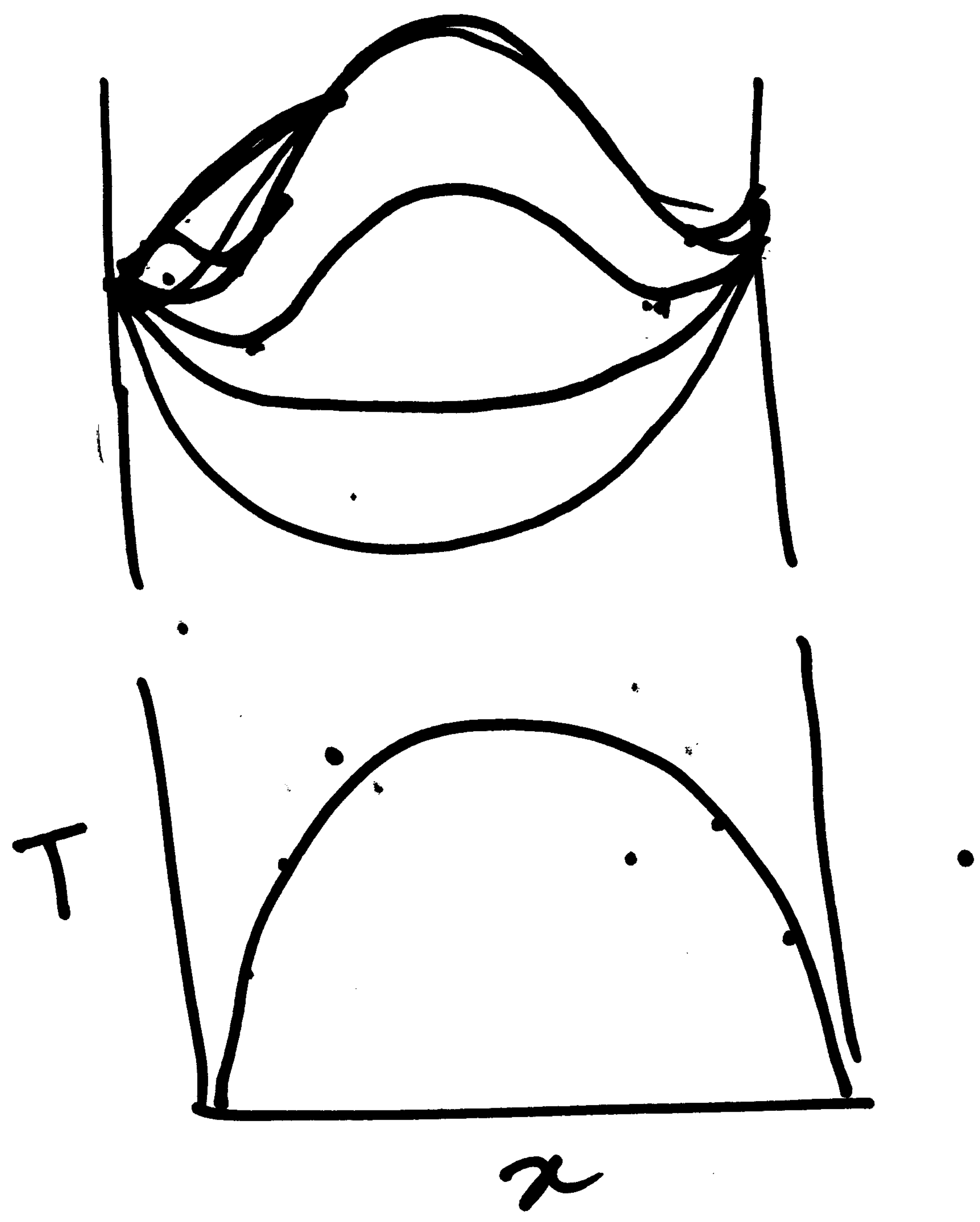


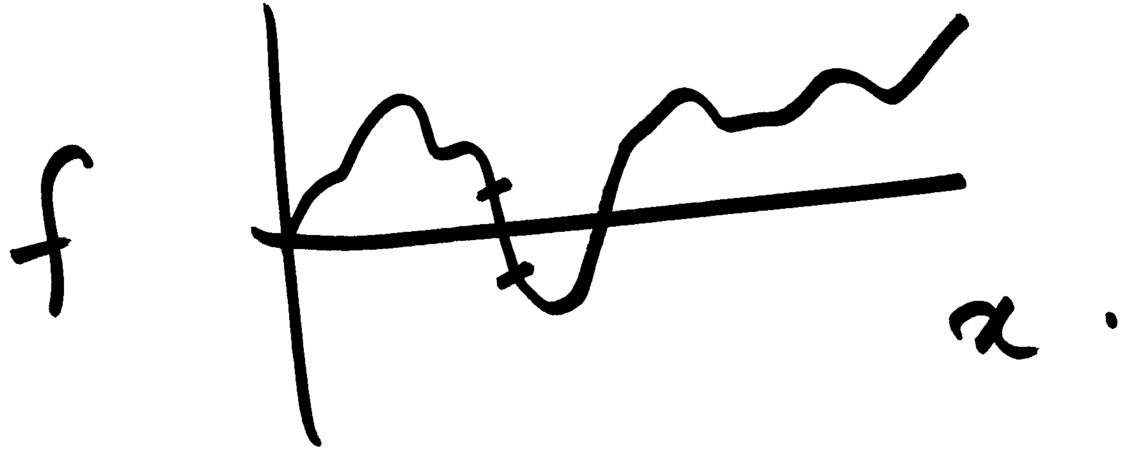
$\underline{\alpha}$	C_1	C_2
2.0	.	.
2.01		
2.02.		

$\dfrac{RT}{\Omega}$ $\qquad \dfrac{1}{\alpha}$

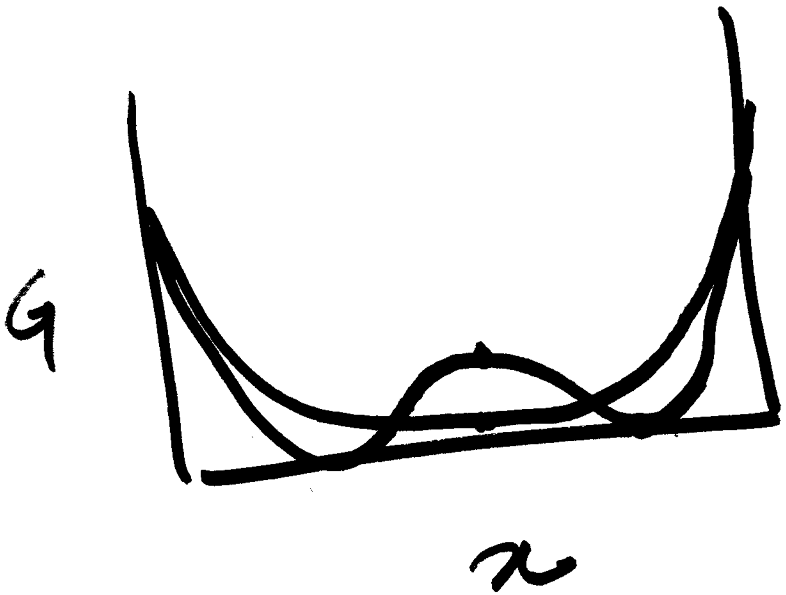
$\dfrac{T}{\left(\dfrac{\Omega}{R}\right)} \rightarrow \alpha$




T
x



$\alpha = 2.$



$$\Delta G = \Omega\, x(1-x) + RT\left[x \ln x + (1-x)\ln(1-x)\right]$$

$$\frac{\Delta G}{RT} = \frac{\Omega}{RT}\, x(1-x) + x \ln x + (1-x)\ln(1-x)$$

$$\alpha \quad \boxed{\frac{\partial c}{\partial t} = D\,\frac{\partial^2 c}{\partial x^2}}$$

t — time — $[T]$

$x \rightarrow$ Position — $[L]$

D — $\frac{m^2}{sec}$ — $[L^2 T^{-1}]$

$$\frac{\partial c}{\partial t} = D \frac{\partial^2 c}{\partial x^2}.$$

Characteristic time τ.
Characteristic length L_0

$$\frac{1}{\tau} \frac{\partial c}{\partial (t/\tau)} = \frac{D}{L_0^2} \frac{\partial^2 c}{\partial (x/L_0)^2}$$

$$\frac{\partial c}{\partial t'} = \underbrace{\frac{D\tau}{L_0^2}}_{D'} \frac{\partial^2 c}{\partial x'^2}$$

$$\frac{\partial c}{\partial t'} = D' \frac{\partial^2 c}{\partial x'^2}$$

$$\frac{D\tau}{L_0^2} = k$$

$$D' = 1$$

$$\boxed{\frac{\partial c}{\partial t'} = \frac{\partial^2 c}{\partial x'^2}}$$