8.3 Partnership - Separable Activities

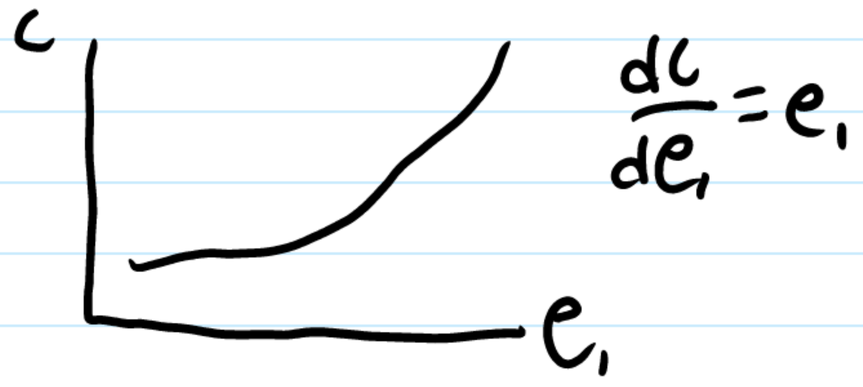
Tuesday, September 15, 2020 10:07 PM

Partnership

$$\text{Value} = V(e_1, e_2) = e_1 + e_2$$

(effort)

$$C_1(e_1) = \tfrac{1}{2}e_1^2 \qquad C_2(e_2) = \tfrac{1}{2}(e_2)^2$$



Each keeps $\frac{1}{2}V$

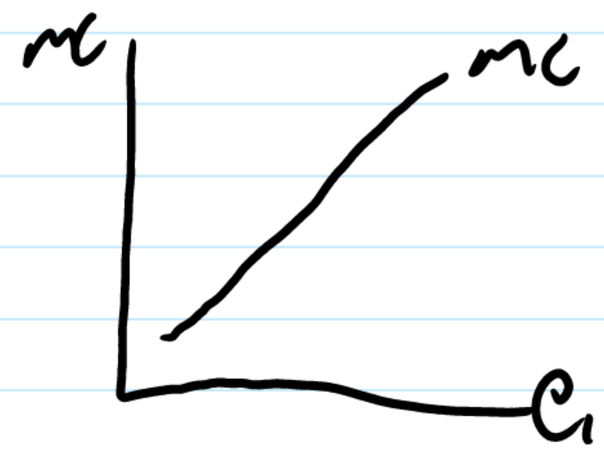
$$\Pi_1 = \tfrac{1}{2}V - C_1(e_1)$$

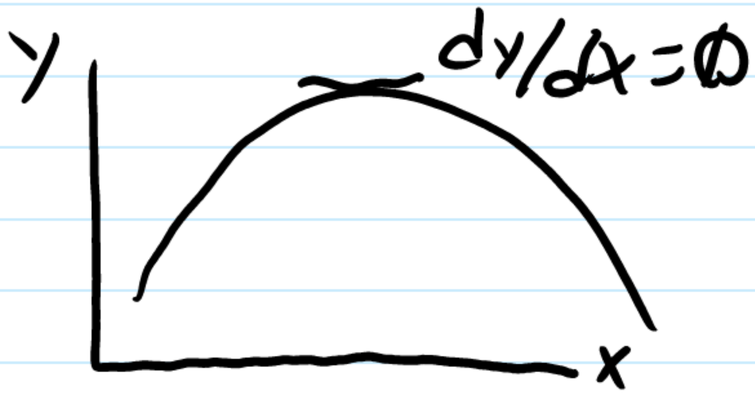
$$= \tfrac{1}{2}e_1 + \tfrac{1}{2}e_2 - \tfrac{1}{2}e_1^2$$

$$\frac{d\Pi_1}{de_1} = \tfrac{1}{2} - 2\left(\tfrac{1}{2}\right)\cdot e_1^{(2-1)}$$

$$= \tfrac{1}{2} - e_1 = 0$$

$$e_1 = 1/2$$





Same for P_2, $e_2 = 1/2$

$$\Pi_1 = \tfrac{1}{2}\left(\tfrac{1}{2} + \tfrac{1}{2}\right) - \tfrac{1}{2}\cdot\tfrac{1}{2}^2$$

$$= \tfrac{1}{2}(1) - \tfrac{1}{2}\left(\tfrac{1}{4}\right)$$

$$= \tfrac{1}{2} - \tfrac{1}{8}$$

$$= 3/8$$

$\Pi_2 = 3/8$ $\rightarrow$ $\Pi = \Pi_1 + \Pi_2 = 3/4$

$$\Pi = e_1 + e_2 - \tfrac{1}{2}e_1^2 - \tfrac{1}{2}e_2^2$$

$d\Pi/de_1 = 1 - e_1 = 0 \rightarrow e_1 = 1$

$d\Pi/de_2 = 1 - e_2 = 0 \rightarrow e_2 = 1$

$\Pi = 2 - \frac{1}{2}\cdot 1^2 - \frac{1}{2}\cdot 1^2 = 1$ (profit)

IF independent...

$\Pi = e_1 - \frac{1}{2}e_1^2$ $\quad d\Pi/de_1 = 1 - e_1 = 0 \rightarrow e_1 = 1$

same for P_2