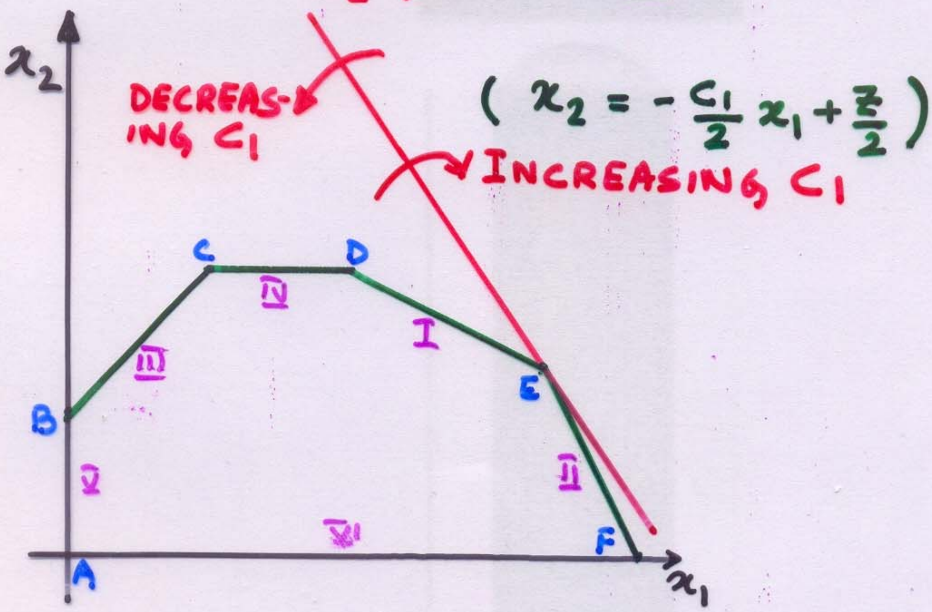
COEFFICIENTS OF OBJECTIVE FUNCTIONS

MAX $Z = 3x_1 + 2x_2$ OR $(Z = C_1 x_1 + 2x_2)$ OR $(Z = (3+\delta_1)x_1 + 2x_2$

s.t.

$$
\begin{aligned}
x_1 + 2x_2 &\leq 6 \quad \cdots\cdots \ \mathrm{I} \\
2x_1 + x_2 &\leq 8 \quad \cdots\cdots \ \mathrm{II} \\
-x_1 + x_2 &\leq 1 \quad \cdots\cdots \ \mathrm{III} \\
x_2 &\leq 2 \quad \cdots\cdots \ \mathrm{IV} \\
x_1 &\geq 0 \quad \cdots\cdots \ \mathrm{V} \\
x_2 &\geq 0 \quad \cdots\cdots \ \mathrm{VI}
\end{aligned}
$$



HOW MUCH CAN I CHANGE C_1 WITHOUT MOVING AWAY FROME.

C_1 CAN BE INCREASED TILL THE RED LINE BECOMES PARALLEL WITH II. AT THAT PT. BOTH E & F (AND ALL PTS. IN BETWEEN) ARE OPTIMAL. ANY FURTHER INCREASE WILL SHIFT THE OPTIMUM TO F.

$$\mathrm{II} \rightarrow 2x_1 + x_2 = 8 \Rightarrow x_2 = -2x_1 + 8$$

$$-\frac{C_1^{MAX}}{2} = -2 \Rightarrow C_1^{MAX} = 4$$

† C_2 CAN BE DECRESED TILL THE RED LINE BECOMES PAR. WITH I. AT THAT PT. BOTH E & D (AND ALL PTS. IN BETWEEN) ARE OPTIMAL. ANY FURTHER DECREASE WILL SHIFT THE OPTIMUM TO D.

$$\mathrm{I} \rightarrow x_1 + 2x_2 = 6 \Rightarrow x_2 = -\frac{1}{2}x_1 + 3.$$

$$-\frac{C_1^{MIN}}{2} = -\frac{1}{2} \Rightarrow C_1^{MIN} = 1$$