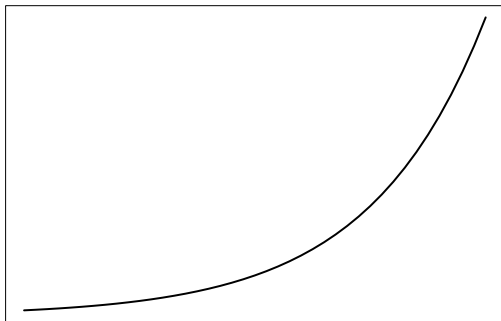


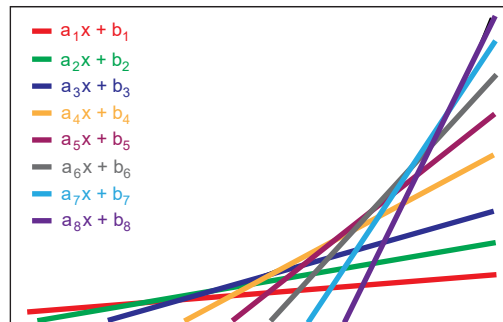
Concentration of metabolite j (C_j)



Natural logarithm of the concentration of metabolite j (x_j)



Concentration of metabolite j (C_j)



Natural logarithm of the concentration of metabolite j (x_j)

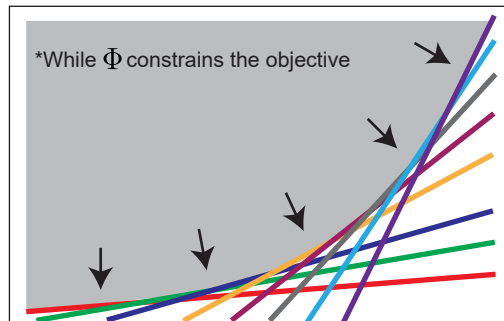
$$C_j^* \geq a_{s,j}x_j + b_{s,j}$$



$$\Phi \leq \sum_{j=1}^J C_j \leq \Phi - \theta$$



C_j^*



x_j