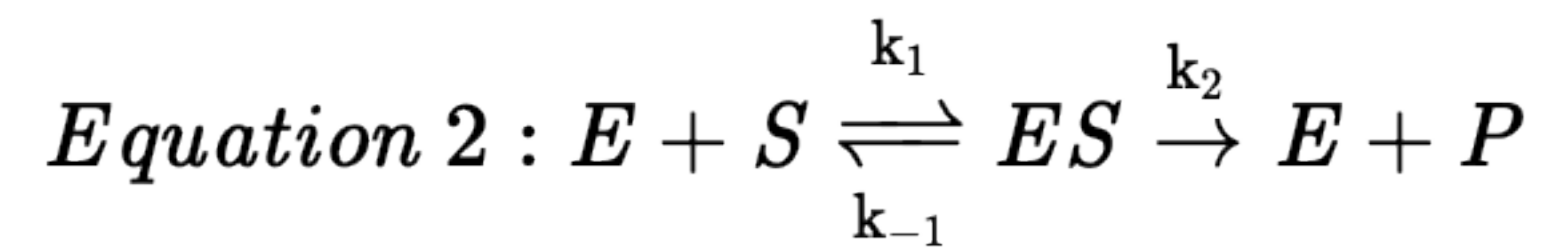
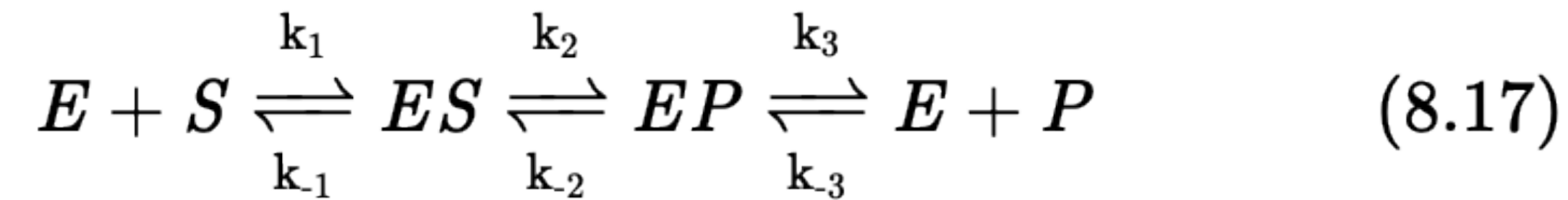


$$\textit{Equation 1} : \frac{1}{V_o} = \frac{K_m}{V_{max} * [S]} + \frac{1}{V_{max}}$$



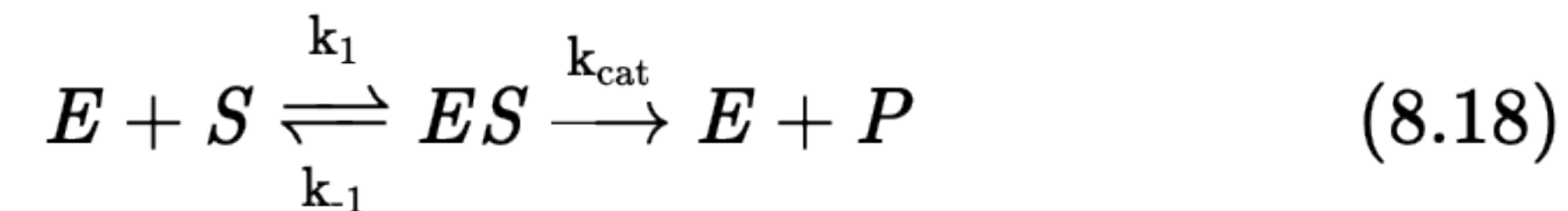
$$\textit{Equation 3} : K_m = \frac{k_{-1} + k_2}{k_1}$$



Assuming Transformation of ES to EP is Rate Limiting:

aka: k_1, k_{-1} , and $k_3 \gg k_2$

k_{cat} = rate constant of rate-determining step (substrate to product)



$$\therefore \text{Velocity} = k_{cat} * [ES] \quad (8.19)$$

When $k_{cat} \ll k_{-1}$,

Equilibrium Dissociation Constant :

$$K_S = \frac{k_{-1}}{k_1} = \frac{[E] * [S]}{[ES]}$$