

(1).

$$\frac{d[E]}{dt} = (k_2 + k_3) * [ES] - k_1 * [E] * [S]$$

$$\frac{d[ES]}{dt} = k_1 * [E] * [S] - (k_2 + k_3) * [ES]$$

$$\frac{d[S]}{dt} = k_2 * [ES] - k_1 * [E] * [S]$$

$$\frac{d[P]}{dt} = k_3 * [ES]$$

$[E], [ES], [S], [P]$ are the concentrations of E, ES, S, P