NAME:_____ Quiz 23

$$E + S \underset{k_{-1}}{\overset{k_1}{\Leftrightarrow}} ES \xrightarrow{k_2} E + P$$

1. **Define the equilibrium dissociation constant (K_D) for the enzyme-substrate complex (ES) in terms of concentrations of *E, S, ES, and/or P*.**

2. **Define the Michaelis constant (K_M) in terms of concentrations of *E, S, ES, and/or P*.**
   a. $\frac{d[P]}{dt}$ =
   b. $\frac{d[ES]}{dt}$ =
   c. **use the steady-state approximation to solve for [ES]**

   d. **replace** $\frac{(k_{-1}+k_2)}{k_1}$ **with K_M.**

   e. **Rearrange the expression to isolation K_M.**

   [Bonus: 5 pts]
   f. **Compare your expressions for K_D and K_M. These two parameters are not equal to each other. Why?**

3. **Describe how to quickly determine the K_M from a plot of initial rates verses [substrate].**