Quiz 22 NAME:_____

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

$k_1 = 11\ uM^{-1}\ s^{-1}$
$k_{-1} = 13\ s^{-1}$
$k_2 = 9.8\ s^{-1}$

1. Determine the value for the equilibrium dissociation constant for ES (K_D). Show your work and include units.

2. Determine the value of K_M. Show your work and include units.

3. Draw a sketch of what you expect to observe for a plot of initial rates verses [substrate]. Make sure to label the axes and include numerical values.

4. Draw a Gibbs Free Energy (G) Diagram for this process.