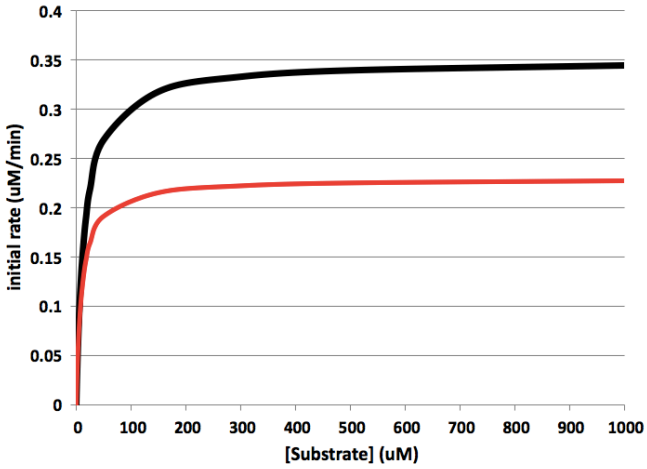
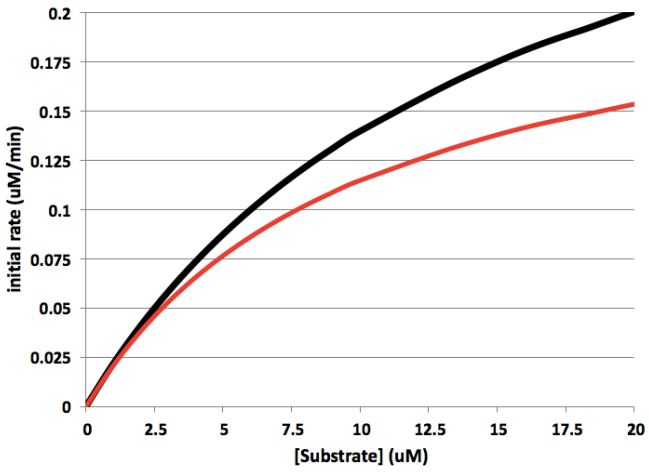
Name: _____ Quiz 23

Image that you collect the following kinetic data in the absence of inhibitor (black line) and in the presence of 1 mM inhibitor (red line). The two graphs are the same data which vary only in the scale of axes.





1. What is the V_{max} in the absence of inhibitor? Include units.

2. What is the V_{max} in the presence of 1 mM of inhibitor? Include units.

3. What is the K_M in the absence of inhibitor? Include units.

4. What is the K_M in the presence of 1 mM of inhibitor? Include units.

5. A competitive inhibitor follows the equation: $v_0 = \frac{V_{max}[S]}{K_M\left(1+\frac{[I]}{K_I}\right)+[S]}$. An uncompetitive inhibitor follows the equation: $v_0 = \frac{\frac{V_{max}}{\left(1+\frac{[I]}{K_I}\right)}[S]}{\frac{K_M}{\left(1+\frac{[I]}{K_I}\right)}+[S]}$. Is the inhibitor competitive or uncompetitive? Verify your answer quantitatively.

6. What is the K_I for the inhibitor? Include units.