1. Label the x and y axes and then use the above graph to fill in the following table:

<table>
<thead>
<tr>
<th></th>
<th>Km</th>
<th>Vmax</th>
</tr>
</thead>
<tbody>
<tr>
<td>No inhibitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ibuprofen, 10 mg/ml</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What kind of inhibition is this? What evidence did you use to determine this?

3. Write the equilibrium reactions for the Enzyme, Substrate and Inhibitor.

4. Draw a line on the graph to show the expected results if 20mg/mL of ibuprofen was used.
5. What will happen to the terms listed below, when an enzyme is added to the following reaction? Circle the best answer for each.

\[
\begin{align*}
S &\rightarrow P \\
\text{k}_1 &\quad \text{k}_2 \\
K_{eq} &\quad \text{[P]/[S]} \\
\end{align*}
\]

a. \(K_{eq}\)  increase  decrease  stay the same
b. \(k_1\)  increase  decrease  stay the same
c. \(k_2\)  increase  decrease  stay the same
d. \(\Delta G^\circ\)  increase  decrease  stay the same
e. \(\Delta G^\pm\)  increase  decrease  stay the same

6. An enzyme catalyzes the reaction \(A \leftrightarrow B\), the \(K_m\) for the substrate \(A\) is \(4 \mu M\) and \(k_{cat} = 20 \text{ min}^{-1}\).

a. When \([A] = 6 \text{mM}\), \(v_o = 480 \text{nM/min}\), what is \(E_t\)?

b. When \(E_t = 0.5 \mu M\), \(v_o = 5 \mu M/\text{min}\), what was \([A]\)?

c. Does this enzyme have catalytic perfection? Why or why not?

7. Use the graph shown below to answer the following questions.

\[
\begin{align*}
\text{Effect of cAMP on cAMP dependent Protein Kinase} \\
\end{align*}
\]

a. Label the y and x axes.
b. Label the line that shows the activity of cAMP dependent kinase when cAMP is present.
c. What kind of enzyme control is this? How do you know?