CONCEPT: MICHAELIS-MENTEN VS LINEWEAVER BURK PLOTS

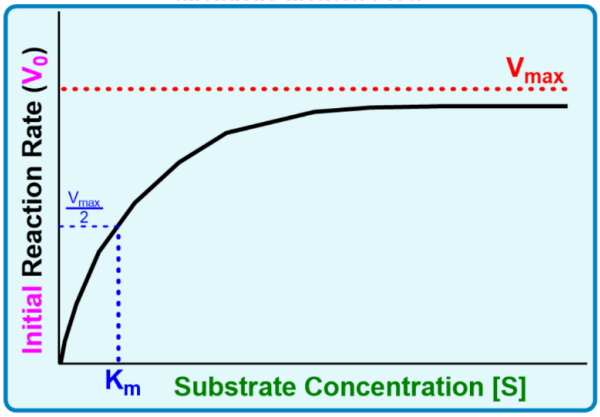
●Equations can't be used if multiple variables are missing, but V_{max} & K_m can be determined _____ via experiments.

●A Lineweaver-Burk plot provides some graphical _____ over a Michaelis-Menten plot.

□ Michaelis-Menten plots can only _____ V_{max} and K_m.

□ Lineweaver-Burk plots can _____ *accurately* determine V_{max} and K_m.

Michaelis-Menten Plot:

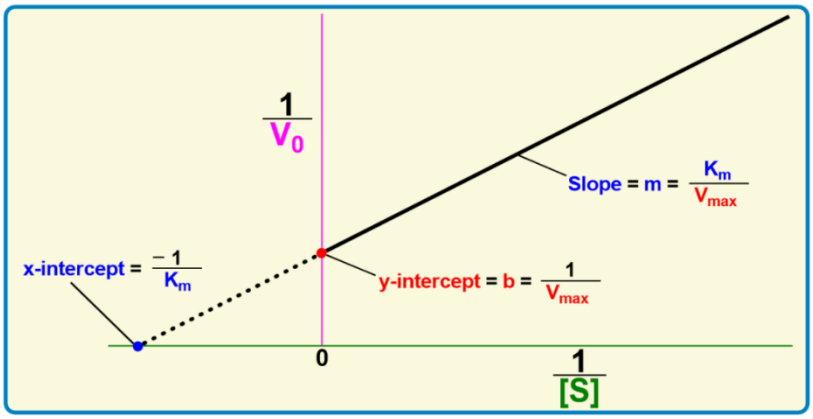


Innacurate V_{max} obtained by *estimating* where V_0 curve levels-off and ***approaches*** V_{max}.

↓

Innacurate K_m since K_m obtained from ____V_{max}

Lineweaver-Burk Plot:



Accurate V_{max} obtained from ___**-intercept**.

↓

Accurate K_m obtained from ___**-intercept**.

PRACTICE: Why is it preferable to use a Lineweaver-Burk over a Michaelis-Menten plot when studying enzyme kinetics?

a) To directly visualize K_m & V_{max} on the plot.

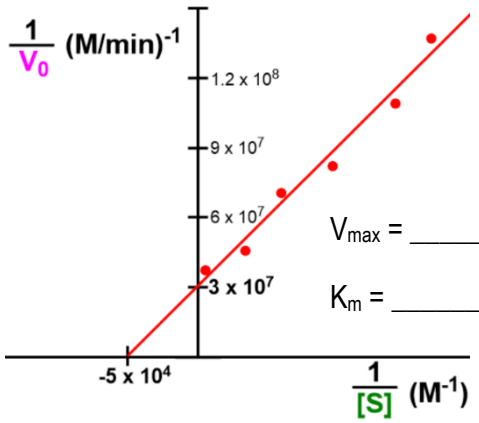
b) To plot kinetic data as a hyperbolic curve instead of a line.

c) To obtain a more accurate measure of the V_0.

d) To remove terms that cannot be calculated in a typical enzyme kinetics experiment.

e) To get more accurate estimates of K_m & V_{max}.

PRACTICE: You measure V_0 of an enzyme at 6 different [S] & plot the data on a Lineweaver-Burk plot. You then determine the line of best fit to the data to visualize the x & y intercepts. Calculate the V_{max} & K_m of the enzyme. Hint: pay close attention to the indicated units.



V_{max} = _____ nM/min

K_m = _____ μM