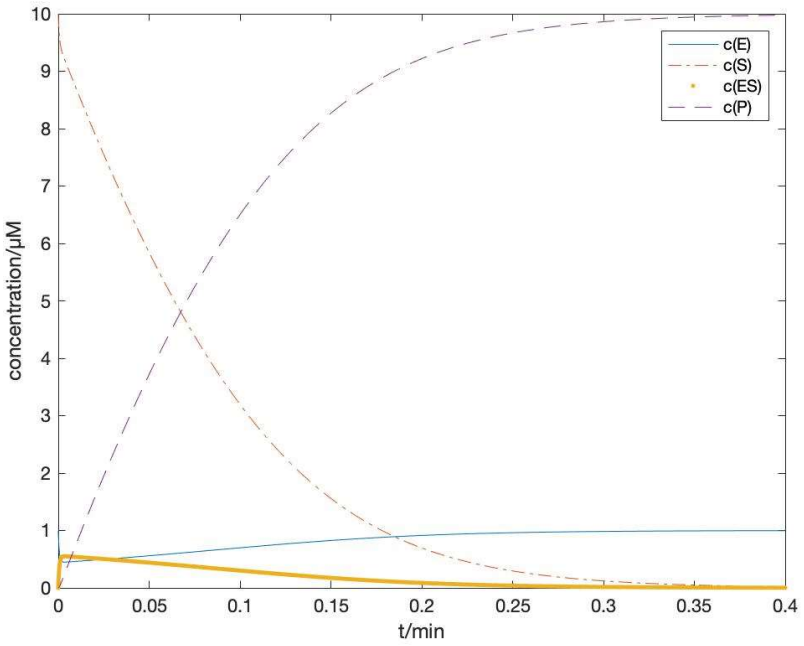
8.1.

r( ) = the rate of changes

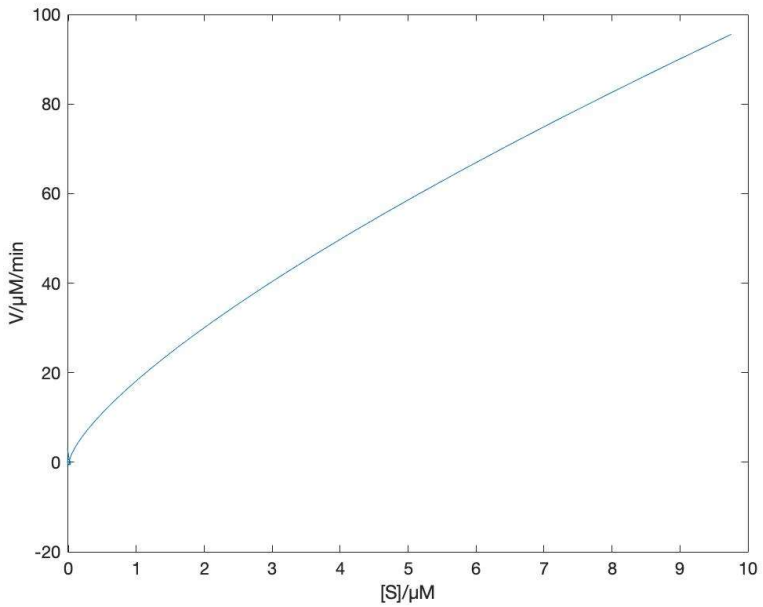
[ ] = concentration

$$r(E) = (k_2 + k_3)[ES] - k_1[E][S]$$
$$r(S) = k_2[ES] - k_1[E][S]$$
$$r(ES) = k_1[E][S] - (k_2 + k_3)[ES]$$
$$r(P) = k_3[ES]$$

8.2.



8.3.



To conduct the plot, I need concentration of S as the independent variable and the rate

of changes of P as the dependent variable. For the former one, I can obtain the data from the curve directly. For the latter one, I need to calculate the slope of the c(P) curve.
I fitting the curves of c(S) and c(P) and obtain 2 equations of them respectively. To obtain the slope of the c(P) curve, I diff its fitting equation on my own. In the codes, P represents the velocity of the product of P and Q represents the concentration of substrate S. Parameter p1-p7 and q1-q7 is calculated by fitting function of MATLAB. Finally, I plot the velocity V as a function of the concentration of the substrate S by calculating each data pair in each t. But the result has some problems. With the increase of concentration of S, the velocity doesn't level off. I guess the problem may be relative to the error of fitting equation. As the knowledge I learn in *Biochemistry*, I think the correct answer should be like this: