Answer on Question #78397 - Chemistry - Physical Chemistry

Question: A reaction is catalyzed by an enzyme with parameters k=75 s-1, KM=24·10-6 M and concentration [E]0= 2.5·10-6 M. The initial concentration of the substrate is [S]0= 8·10-4 M. Estimate initial reaction rate. Find the substrate's concentration providing 4-fold decreasing of the reaction rate.

Solution:

$$v_0 = \frac{k \cdot [E]_0 \cdot [S]_0}{[S]_0 + K_m};$$

v_0 = 75·2.5·10^{-6}·8·10^{-4}/(8·10^{-4} + 24·10^{-6}) =1.5·10^{-7}/8.24·10^{-4} = 1.8·10^{-4} M/s.

Answer: 1.8·10^{-4} M/s.