

INVESTIGATION OF THE REACTION RATE CONSTANT PLOT

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We investigate and plot the reaction rate constant as a function of the activation energy E , that is

$$k(E) = k_0 \exp\left(\frac{E}{RT}\right), \text{ where } E \geq 0.$$

Decision. We will mark foremost, that a function $k_0 \exp\left(\frac{E}{RT}\right)$ in equation of Arrhenius is always positive, because $k_0 > 0$ and

$$\exp\left(\frac{E}{RT}\right) > 0.$$

At $E = 0$ constant of speed of reaction $k(0) = k_0$. With the height of E a size $k(E)$ diminishes and

$$\lim_{E \rightarrow +\infty} k_0 e^{-E/RT}.$$

Since

$$k'(E) = k_0 \left(-\frac{1}{RT}\right) e^{-E/RT} < 0;$$

$$k''(E) = k_0 \left(\frac{1}{RT}\right)^2 e^{-E/RT} > 0,$$

that a function $k_0 e^{-E/RT}$ droningly decreases and the concavity of her chart is sent up (fig. 1)

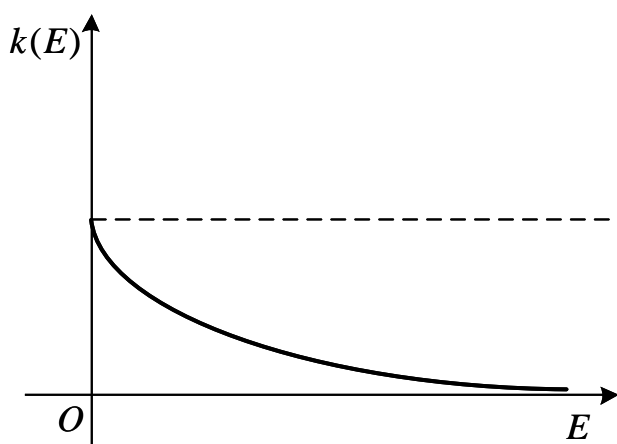


Fig. 1

Conclusion. On practical employments on higher mathematics, at consideration of theme «Derivative and her applications» it is frequently necessary to decide the problems of general character. But for the students of chemical specialties greater interest is presented by problems that is directly related to their profession. Thus, examining problems similar to resulted in this article, we will promote interest and motivation of future specialists in the study of this material.