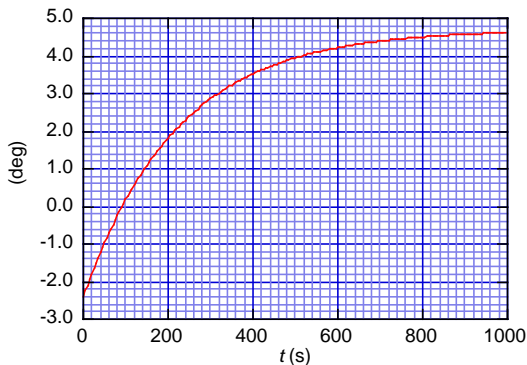


Pledge and signature:

Note: If you want your paper returned folded (i.e., score concealed), please print your name on the back.

1. (10) The figure to the right represents optical rotation data for a hypothetical sugar we shall call *pickanose*. From this figure, give approximate values for the following quantities: (1) α_0 , (2) α_∞ , (3) the inversion time (in s), (4) the half-life of pickanose, and (5) the effective rate constant k_{eff} .



2. (3) An acid-catalyzed reaction has a rate constant of $0.0234 \text{ L mol}^{-1} \text{ min}^{-1}$. A reaction is initiated by mixing 10.00 mL of 6.0 M HCl with 20.0 mL of a solution of the other reactant. Assuming that volumes are additive, calculate the effective rate constant for this mixture.
3. (3) A solution is prepared by dissolving 13.71 g of smactose in water and bringing the volume to 0.100 L in a volumetric flask. The optical rotation observed at λ_D for this solution in a 0.200-m polarimetry cell is -24.7° . Calculate the specific rotation of smactose (units $\text{deg mL g}^{-1} \text{ dm}^{-1}$) at this wavelength and T .