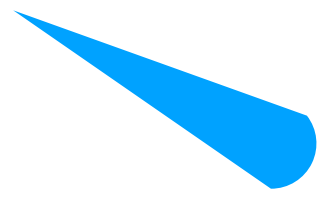
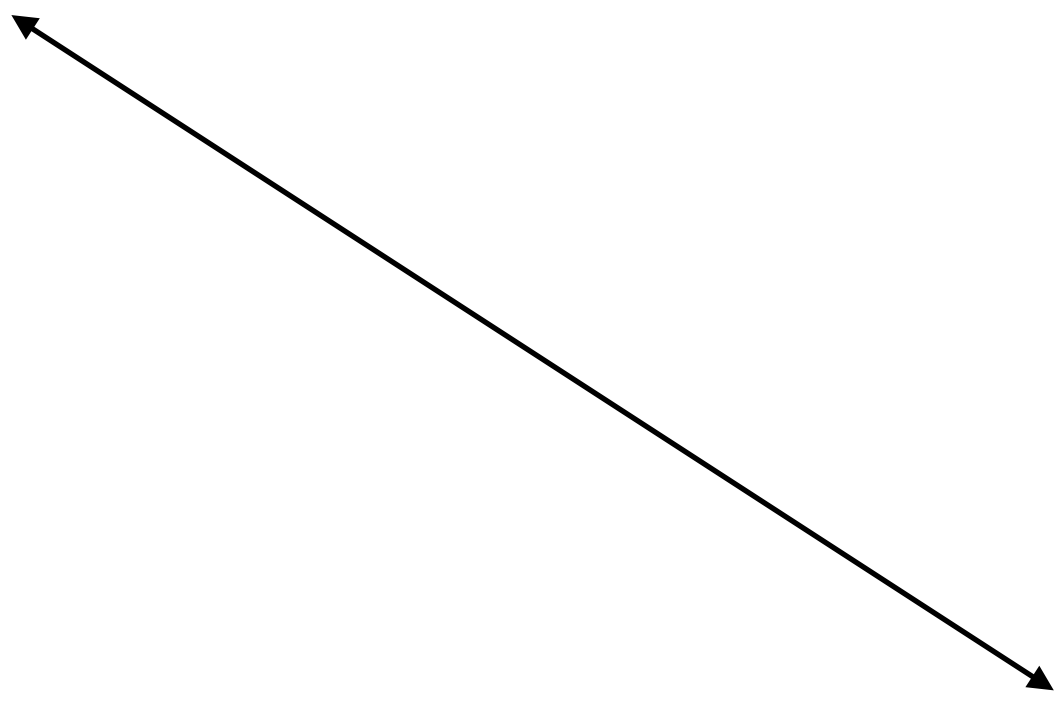
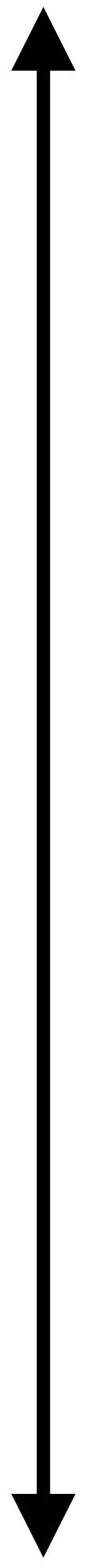




*Proof.* Suppose to the contrary that $\overleftrightarrow{AB} \nparallel \overleftrightarrow{CD}$. Without the loss of generality, we may assume that $B \in \overleftrightarrow{AB} \cap \overleftrightarrow{CD}$. Let $E$ be a point given by Extension that $A - B - E$. Since $A - B - E$, we know that $\angle ADC = \angle ADB < \angle ADE$. Then $d_0 = m\angle ADC < m\angle ADE$ but $\overleftrightarrow{DE} \nparallel \overleftrightarrow{AB}$, which is a contradiction to $d_0$ being the least upper bound. □

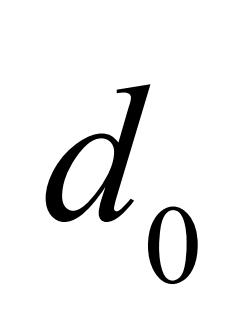
# A

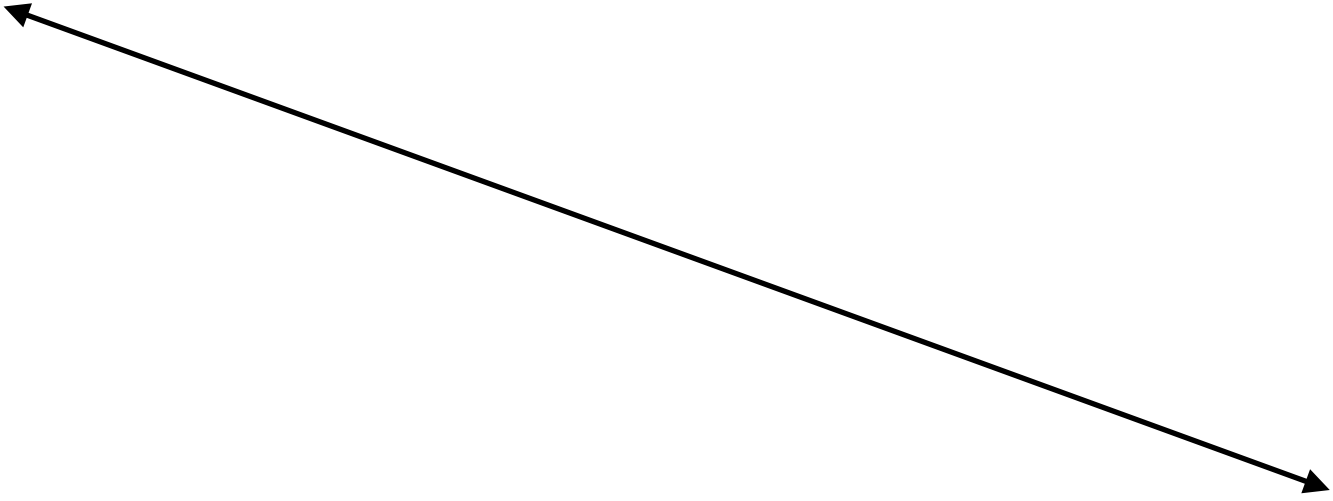


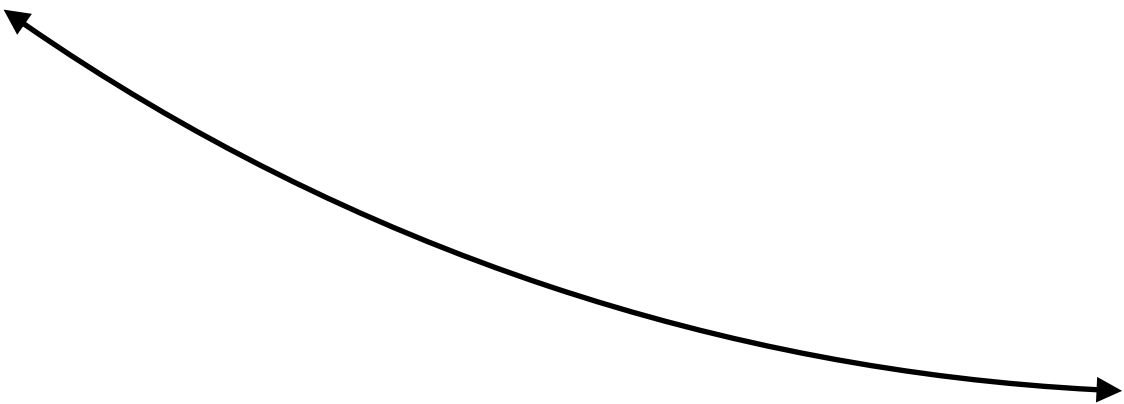
D

B

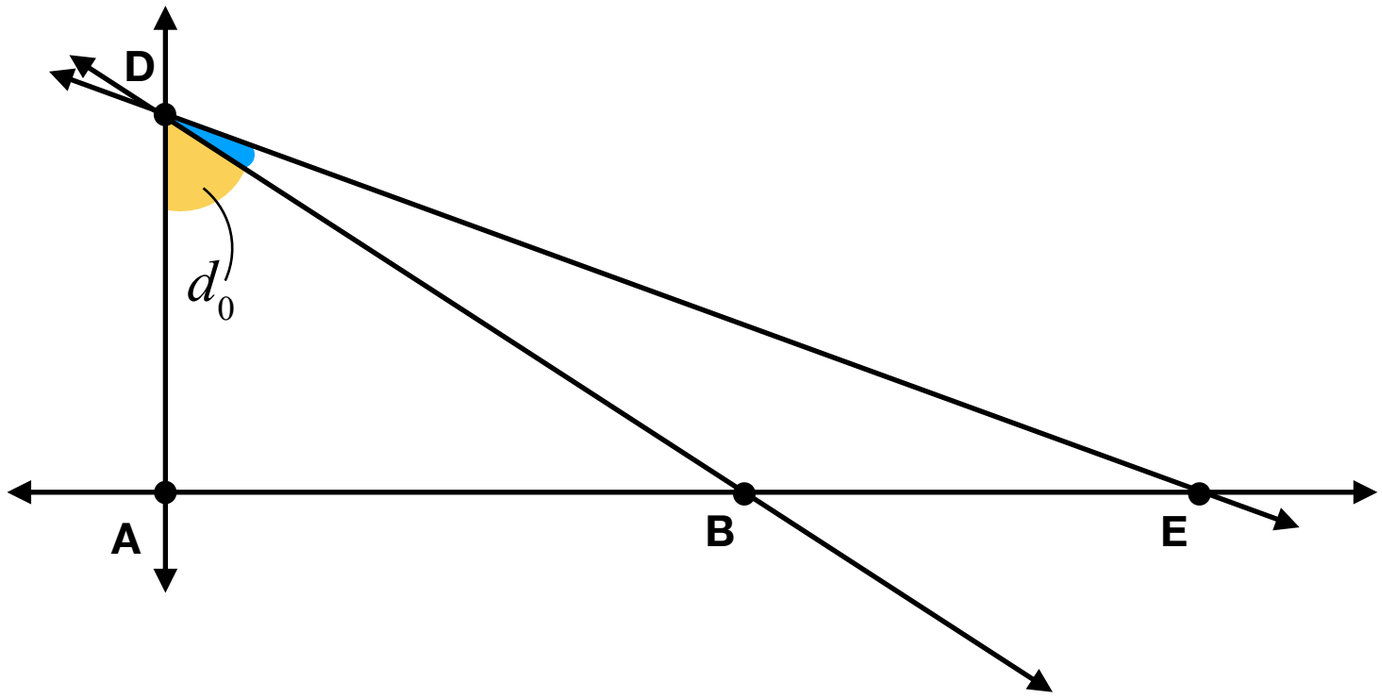
C







E




*Proof.* Suppose to the contrary that $\overleftrightarrow{AB} \nparallel \overleftrightarrow{CD}$. Without the loss of generality, we may assume that $B \in \overleftrightarrow{AB} \cap \overleftrightarrow{CD}$. Let $E$ be a point given by Extension that $A - B - E$. Since $A - B - E$, we know that $\angle ADC = \angle ADB < \angle ADE$. Then $d_0 = m\angle ADC < m\angle ADE$ but $\overleftrightarrow{DE} \nparallel \overleftrightarrow{AB}$, which is a contradiction to $d_0$ being the least upper bound. □