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  - ($\Leftarrow$) Use the fact that of three distinct collinear points only one is between the other two.

- Lemma
  Let A, B, C, D be four distinct points such that C and D are on the same side of $\overleftrightarrow{AB}$ and D is not on $\overrightarrow{AC}$. Then either C is in the interior of $\angle BAD$ or D is in the interior of $\angle BAC$.

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  Let A, B, C, D be four distinct points such that C and D are on the same side of $\overleftrightarrow{AB}$. Then $\mu(\angle BAD) < \mu(\angle BAC)$ if and only if $\overrightarrow{AD}$ is between $\overrightarrow{AB}$ and $\overrightarrow{AC}$.

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- Theorem
  Let A, B, C be three noncollinear points. Then there exists a unique angle bisector for $\angle BAC$.

- Theorem
  Let A, B, C be any three noncollinear points and D any point in the interior of an angle $\angle BAC$. Then there exists a point G such that $\overrightarrow{AD} \cap \overline{CD} = \{G\}$.

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  If $\angle DAB$ and DAC form a linear pair then $\mu(\angle DAB) + \mu(\angle DAC) = 180.$

- Lemma
  Let $C \star A \star B$ and D a point in the interior of the angle $\angle BAE$. Then E is in the interior of the angle $\angle DAC$.

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- Theorem
  (Existence and Uniqueness of Perpendicular Bisectors)

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- Theorem
  (Isosceles Triangle Theorem) Let $\triangle ABC$ be any triangle such that $\overline{AB} \cong \overline{AC}$ then $\angle ABC \cong \angle ACB$.