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Assignment 8

1. Prove: The interior of an angle is convex.
2. Prove: The interior of a triangle is convex.
3. Suppose that segments \overline{AB} and \overline{CD} intersect at a point X such that $A - X - B$, and $C - X - D$. Show that B is in the interior of angle $\angle CAD$, C is in the interior of angle $\angle ADB$, A is in the interior of the angle $\angle DBC$, and D is in the interior of angle $\angle BCA$.

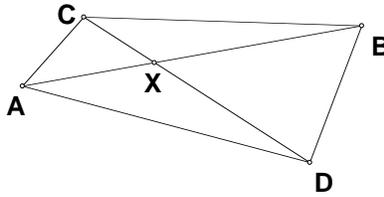


Figure 0.0.1. Exercise 3

4. Prove: An angle $\angle BAD$ is a right angle if, and only if, there is a point C on line \overleftrightarrow{AB} such that angles $\angle BAD$ and $\angle DAC$ are congruent and form a linear pair.
5. If one of the angles formed by a pair of distinct intersecting lines is a right angle, then all four angles are right angles.
6. Prove: Let L be a line, let A be a point on L , and let P be a plane containing L . Then there exists one and only one line M in P intersecting L at A such that $M \perp L$.