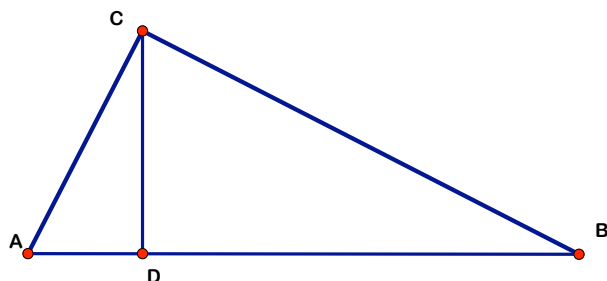


Theorem 50. (Pythagorean Theorem). If $\triangle ABC$ is a right triangle and $\angle C=90^\circ$, then $|AB|^2=|AC|^2+|BC|^2$.

Proof:



Hide Objects

Hide Caption

$$|CD|^2=|AD||DB|$$

$$1. \triangle ABC \sim \triangle ACD.$$

$$2. \frac{|AD|}{|AC|} = \frac{|AC|}{|AB|}$$

$$3. |AC|^2 = |AD| \cdot |AB|$$

$$4. \triangle ABC \sim \triangle CBD.$$

$$5. \frac{|BD|}{|BC|} = \frac{|BC|}{|AB|}$$

$$6. |BC|^2 = |BD| \cdot |AB|$$

$$7. |AC|^2 + |BC|^2 = |BD| \cdot |AB| + |AD| \cdot |AB|$$

$$= (|BD| + |AD|) |AB| = |AB|^2$$

1. Theorem 49, both triangles are right triangles and they share $\angle A$.

2. If two triangles are similar, then the ratios of corresponding sides are equal.

3. Cross multiply 2.

4. Theorem 49, both triangles are right triangles and they share $\angle B$.

5. If two triangles are similar, then the ratios of corresponding sides are equal.

6. Cross multiply 5.

7. Add 3. and 6.