Proving Triangles Using Coordinate Geometry

Distance Formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Midpoint Formula

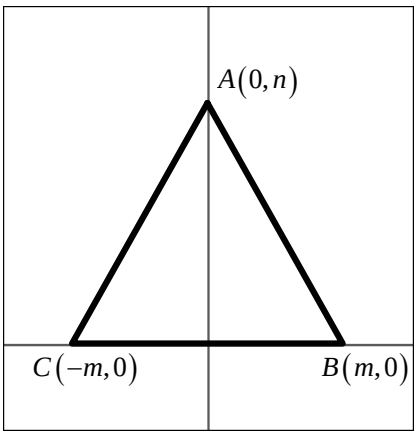
$$(x_m, y_m) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Slope

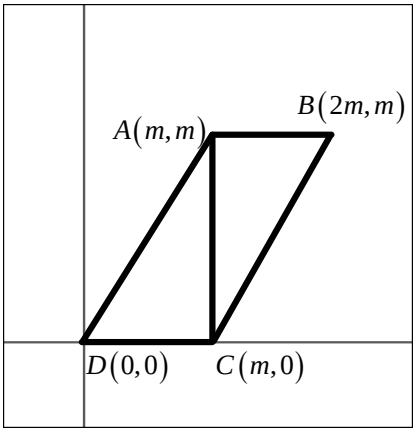
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Directions: Write a coordinate proof.

1. Prove that $\triangle ABC$ is an isosceles triangle.



2. Given: Coordinates of $\triangle ACD$ and $\triangle ACB$
   Prove: $\triangle ACD \cong \triangle ACB$



3. Given: Coordinates of $\triangle ABC$ and $\triangle EDC$
   Prove: $\triangle ABC \cong \triangle EDC$