## 7.9 Do Now: Analytic proof

### Proof: Using the distance formula to prove an isosceles triangle

1. In this problem use the following theorem (copy it at the bottom of the page after your calculations):

   *A triangle is isosceles if and only two of its sides are congruent.*

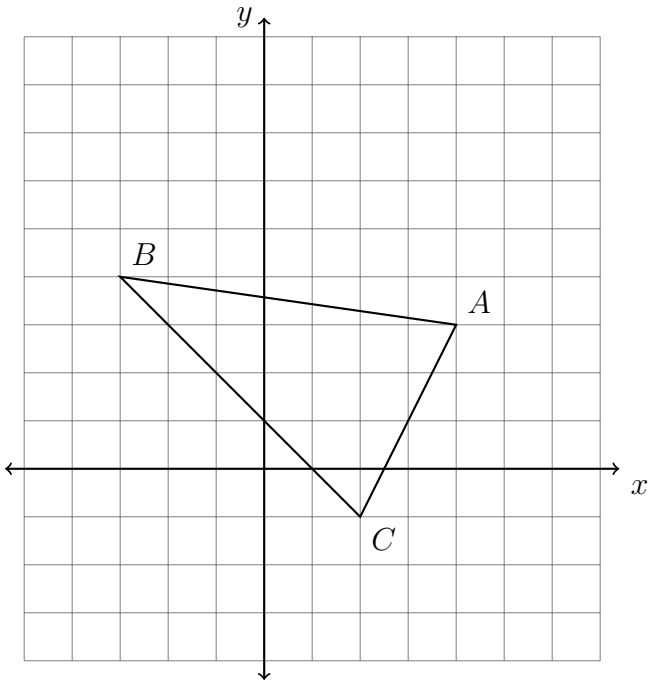
   Shown below is triangle $ABC$, $A(4, 3)$, $B(-3, 4)$, and $C(2, -1)$.

   Prove it is an isosceles triangle by

   (a) finding the length of each of the three sides,

   (b) stating which sides are congruent,

   (c) copying the theorem as your conclusion, adding *therefore* $\triangle ABC$ *is isosceles.*



**Proof: Using slope to prove parallel sides of a trapezoid**

2. In this problem use the following theorem (copy it at the bottom of the page after your calculations):

   *A quadrilateral is a trapezoid if and only exactly two of its sides are parallel.*

   David plotted $A(-1, 6)$, $B(3, 8)$, $C(6, -1)$, and $D(1, 0)$ to form a quadrilateral.

   Prove that David's quadrilateral is a trapezoid by

   (a) finding the slope of each of the four sides,

   (b) stating which opposite sides are parallel, and which opposite sides are not,

   (c) copying the theorem as your conclusion, adding *therefore $ABCD$ is a trapezoid.*