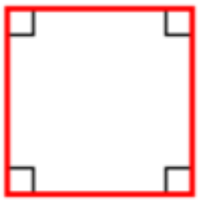
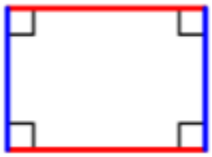
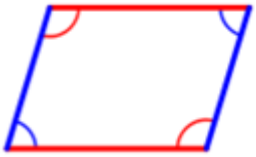
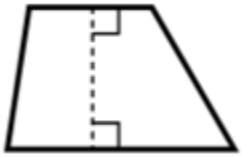
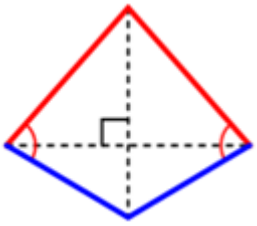
3.3 3.4 Properties of Quadrilaterals

A Classify Quadrilaterals

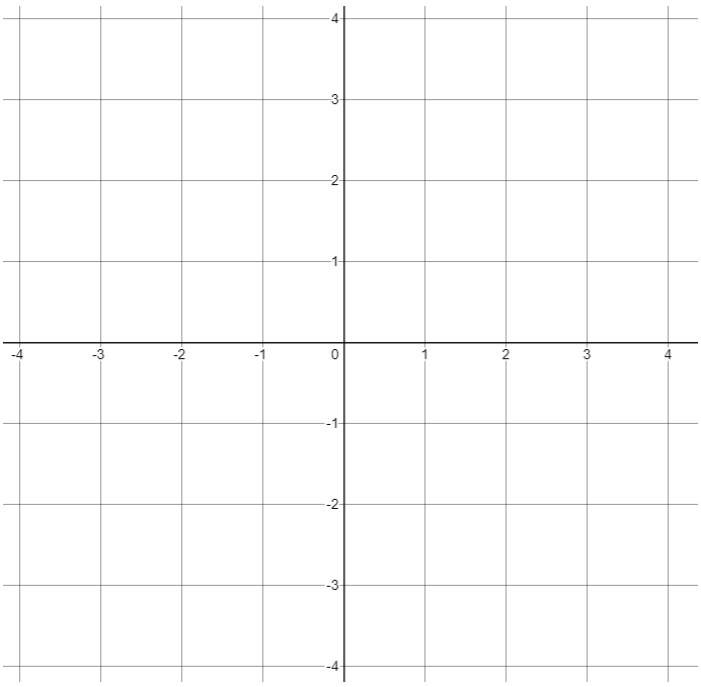
A quadrilateral is a 4-side polygon on a plane. A quadrilateral has:

- Four straight sides (edges)
- Four vertices (corners)
- Four interior angles with a total of 360°
- Two diagonals

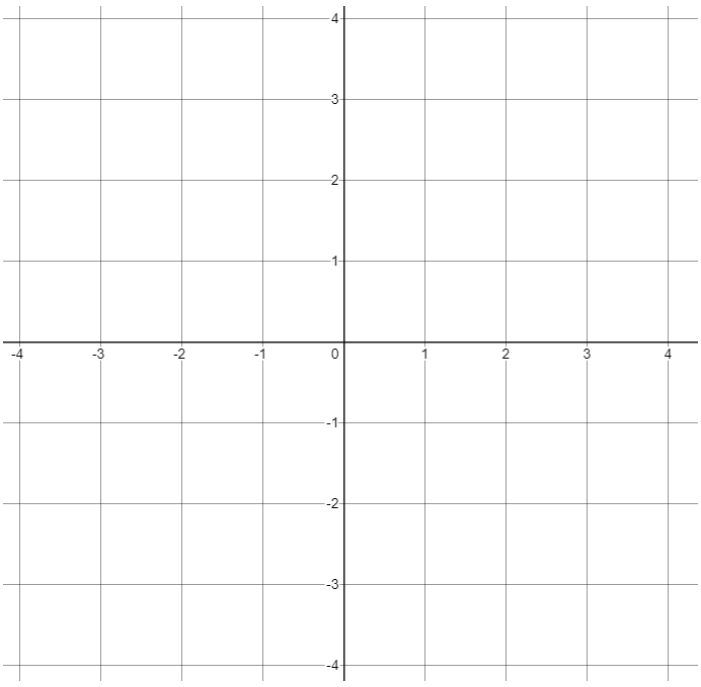
Example 1. Describe the properties of each quadrilateral.

a) square 	b) rectangle 
c) parallelogram 	d) trapezoid 
e) kite 	h) rhombus 

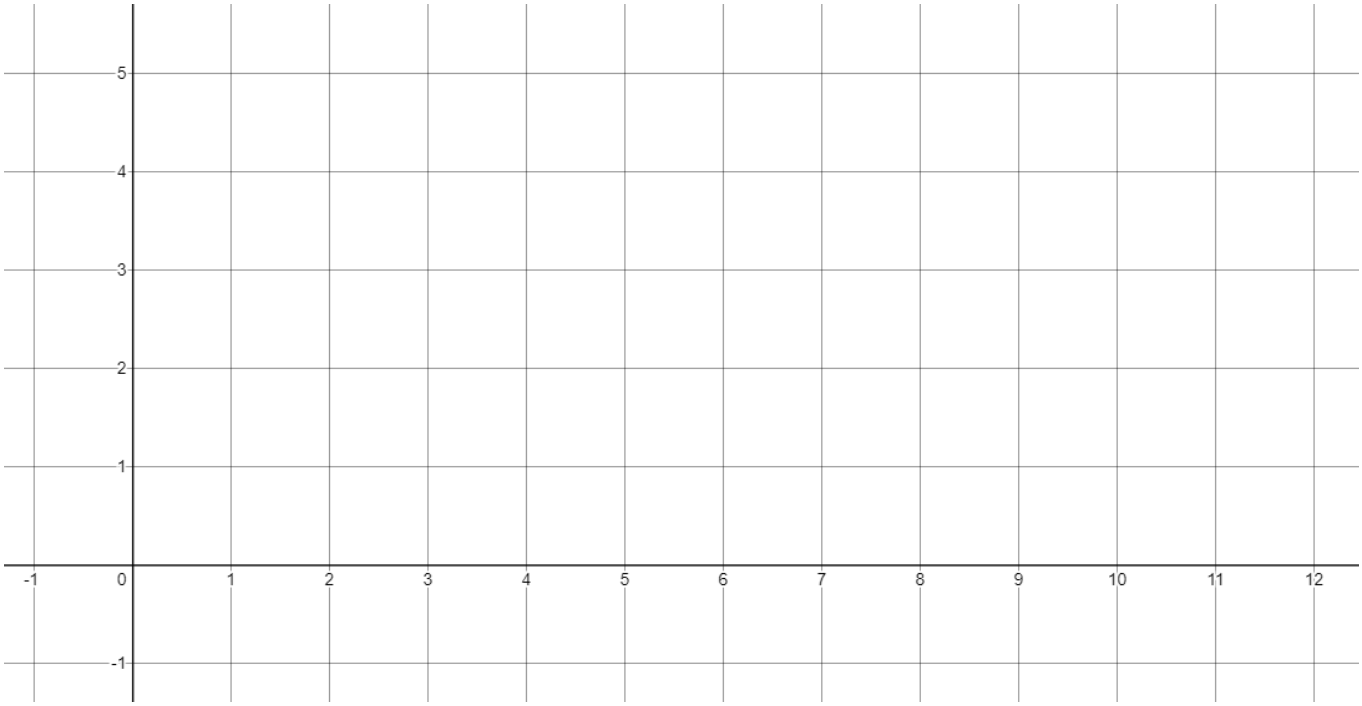
Example 2. Prove that the quadrilateral ABCD where A(-2,-3), B(-4,0), C(-1,2), and D(1,-1) is square.



Example 3. Prove that the quadrilateral ABCD where A(-4,-4), B(-2,-1), C(2,1), and D(0,-2) is a parallelogram.

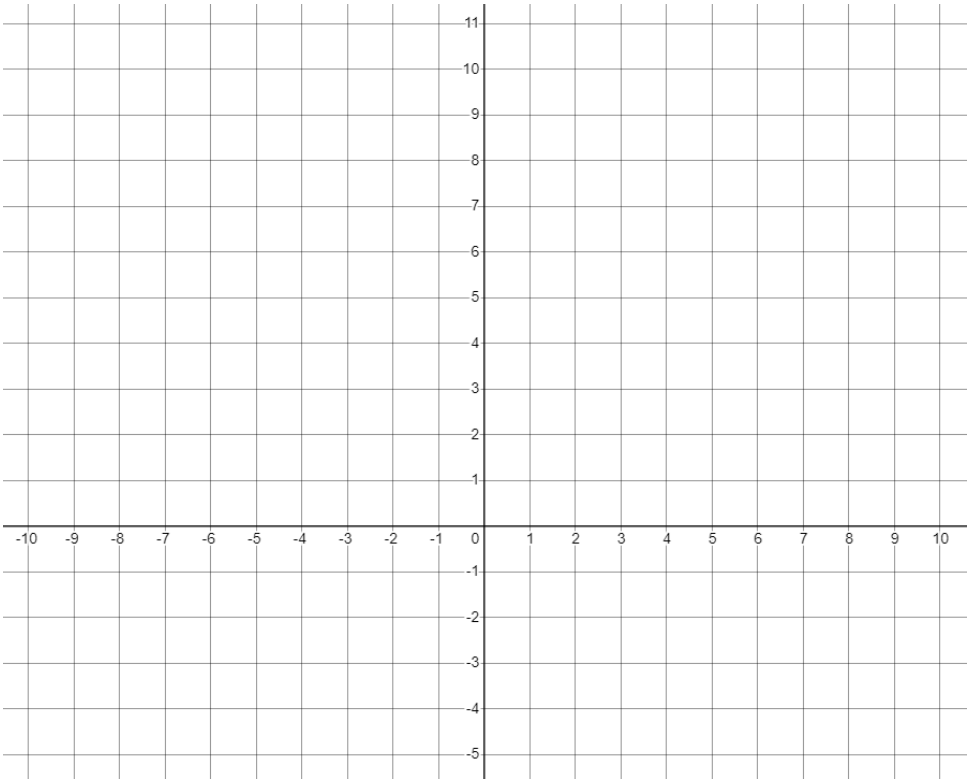


Example 4. Prove that the quadrilateral ABCD where A(0,0), B(3,4), C(10,5), and D(5,0) is a kite.



Example 5. Prove that the diagonals of the kite from the previous example are perpendicular to each other.

Example 6 (Challenge). Find the point of intersection of the diagonals of the quadrilateral ABCD where A(-4,-5), B(-6,5), C(4,11), and D(2,-3).



Example 7 (Assignment). Design your own quadrilateral ABCD by choosing a point in each quadrant of the coordinate system. Prove that the quadrilateral PQRS, where P, Q, R, and S are the midpoints of each side (AB, BC, CD, and DA corresponding), is a parallelogram.

Notes: Textbook Pages 128-133, 137-141
Homework: Textbook Page 136 #14, Page 1, 2, 3, 5, 11, 14