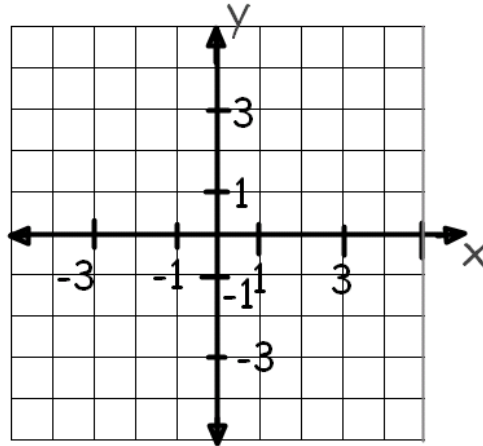


## Section 4-2 Introduction to Coordinate Geometry

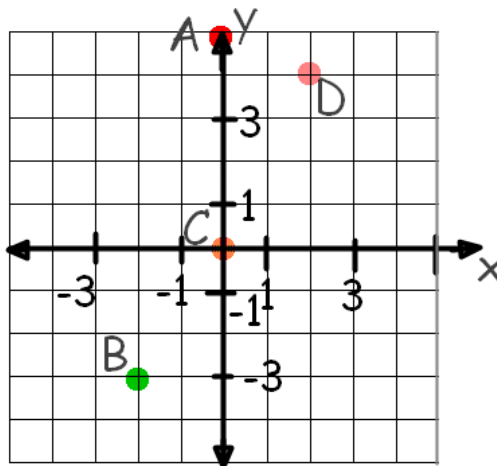
### Warm-up:

Plot the following points on a coordinate plane. Then state which quadrant they are located in. A(0,5), B(-2,-3), C(0,0), D(2,4)



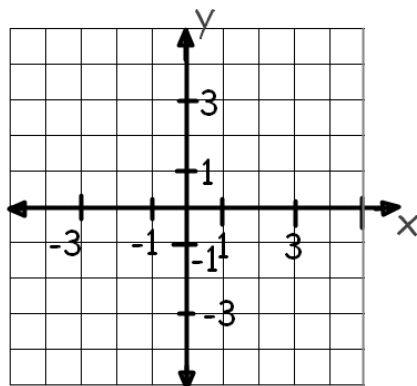
*Solution*

Point A is on the y-axis, Point B is in QIII, Point C is at the origin, and Point D is in QI



### 4-2 Introduction to Coordinate Geometry

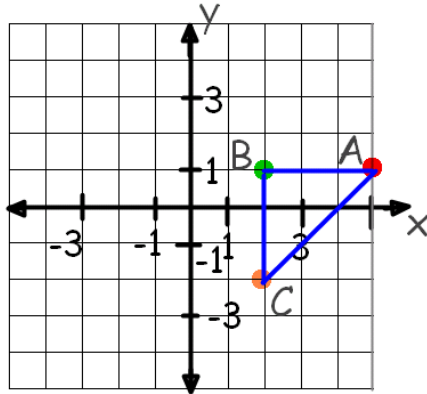
Example 1: Plot the following points and connect them: A(5,1), B(2,1), C(2,-2).



a)

- b) Identify the shape of the polygon formed.
- c) Explain how you know what shape it is.

*Solution*

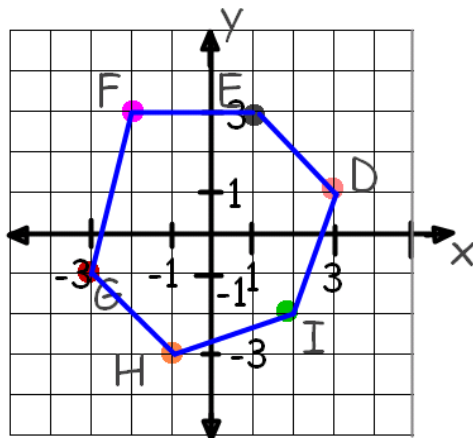


- a)
- b) This is an isosceles right triangle
- c) We know this because  $\angle B$  is  $90^\circ$  and side  $AB =$  side  $BC$ .

Example 2: Use the following points: D(3,1), E(1,3), F(-2,3), G(-3,-1), H(-1,-3), I(2,-2).

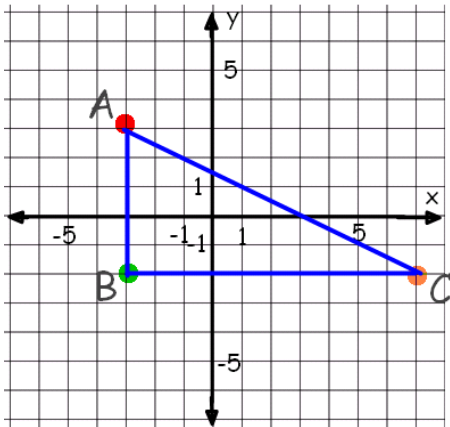
- a) Plot the points and connect them.
- b) Identify the shape of the polygon formed.
- c) Explain how you know what it is.

*Solution*



- a)
- b) This is a hexagon.
- c) We know this because it has 6 sides.

Example 3: Find the area of the polygon:



Solution

This is a right triangle.

The formula for the area of a triangle is  $A = \frac{1}{2}bh$

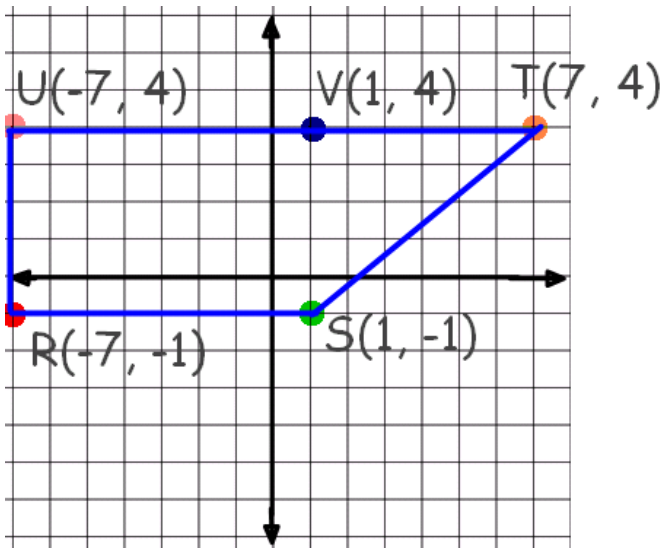
The base is  $7 + 3 = 10$  and the height is  $4 + 2 = 6$

so plug in 10 for b and 6 for h...  $A = \frac{1}{2}(10)(6)$

$$A = \frac{1}{2}(60)$$

$$\boxed{A = 30}$$

Example 4: Find the area of the polygon.



Solution

$$\begin{aligned} \text{Area of the trapezoid} &= \text{area of the rectangle} + \text{area of the triangle} \\ &= l \cdot w + \frac{1}{2}bh \end{aligned}$$

For the Rectangle: The length is  $1 + 7 = 8$  and the width is  $4 + 1 = 5$

For the Triangle: The base is  $7 - 1 = 6$  and the height is  $4 + 1 = 5$

so plug in these values...

$$A = 8 \cdot 5 + \frac{1}{2}(6)(5)$$

$$A = 40 + \frac{1}{2}(30)$$

$$A = 40 + 15$$

$$\boxed{A = 55}$$

Homework:

Read pg. 190-194

Pg. 194 #6-9, 11-15, 17, 20, 26, 27