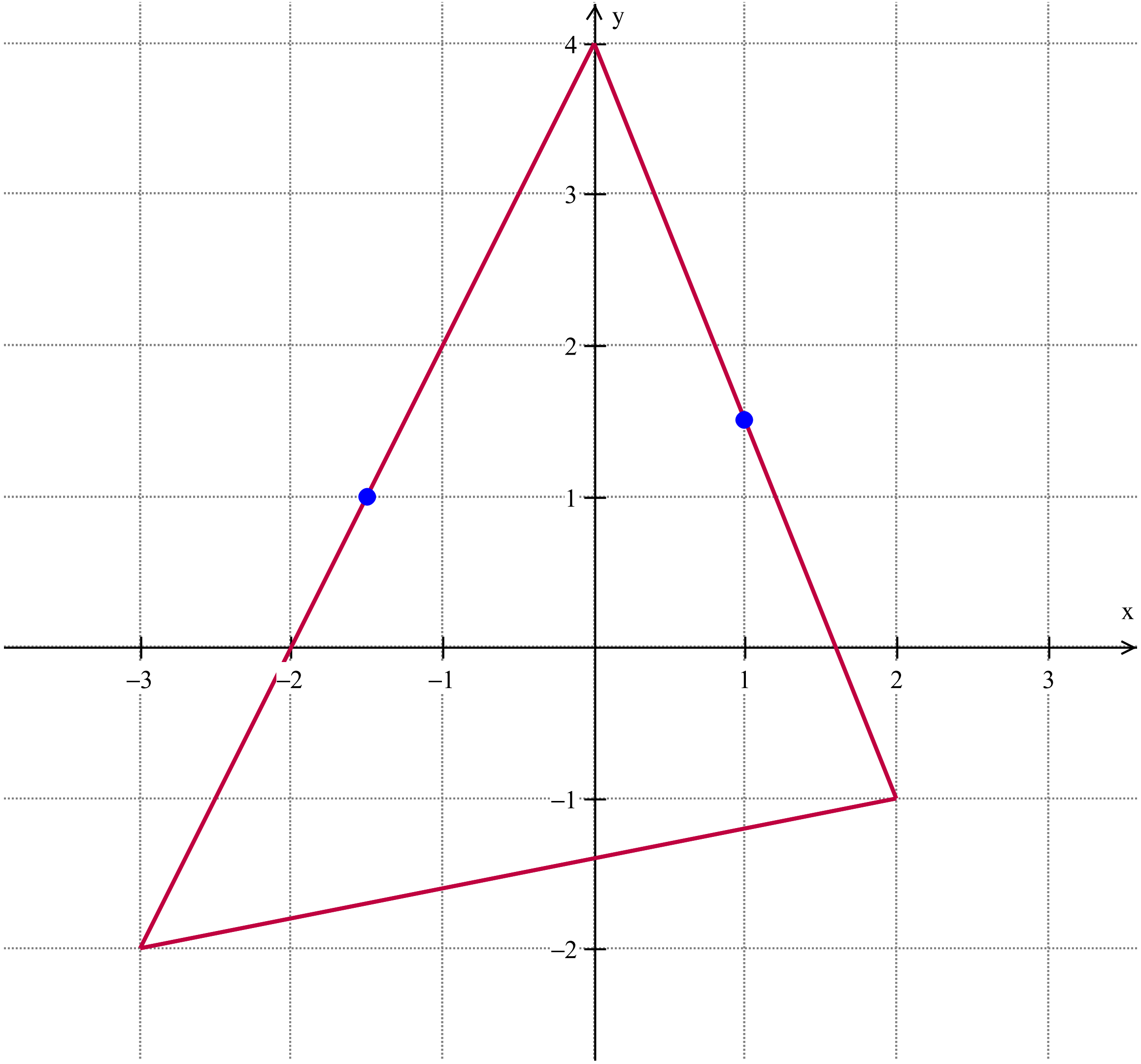
Midsegments

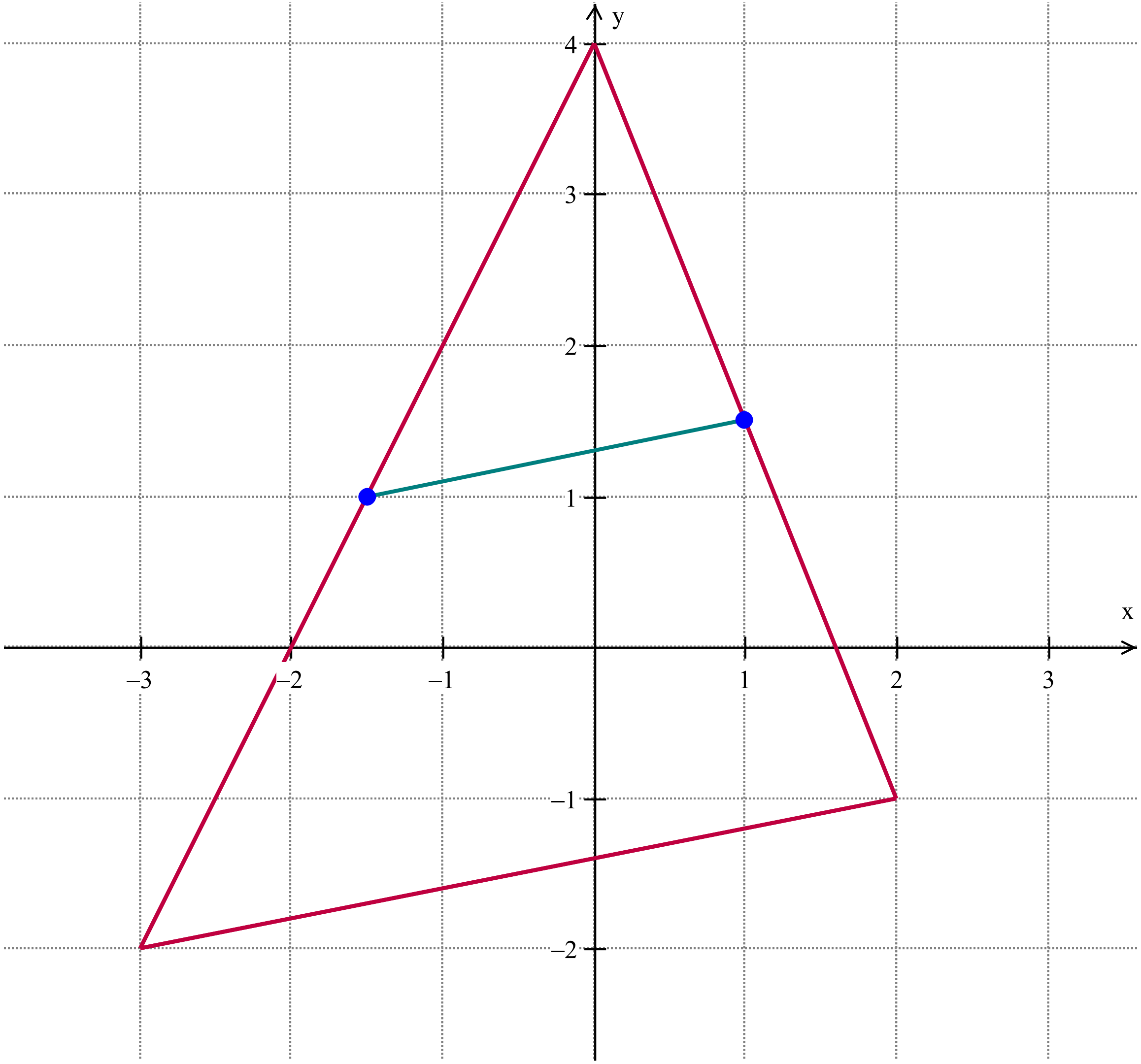
Notice the location of these two points

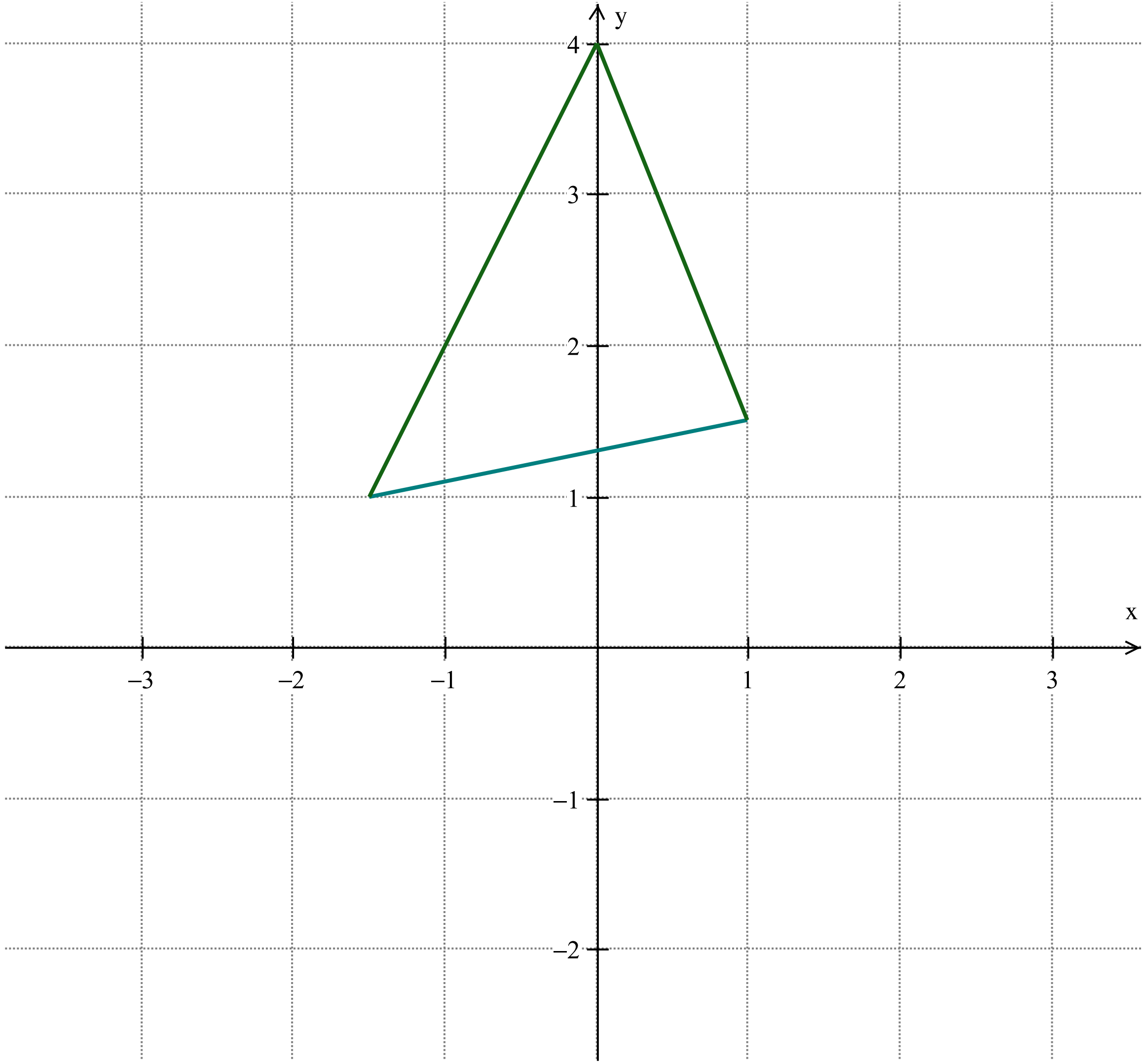
How would you locate them?

Midpoint Formula

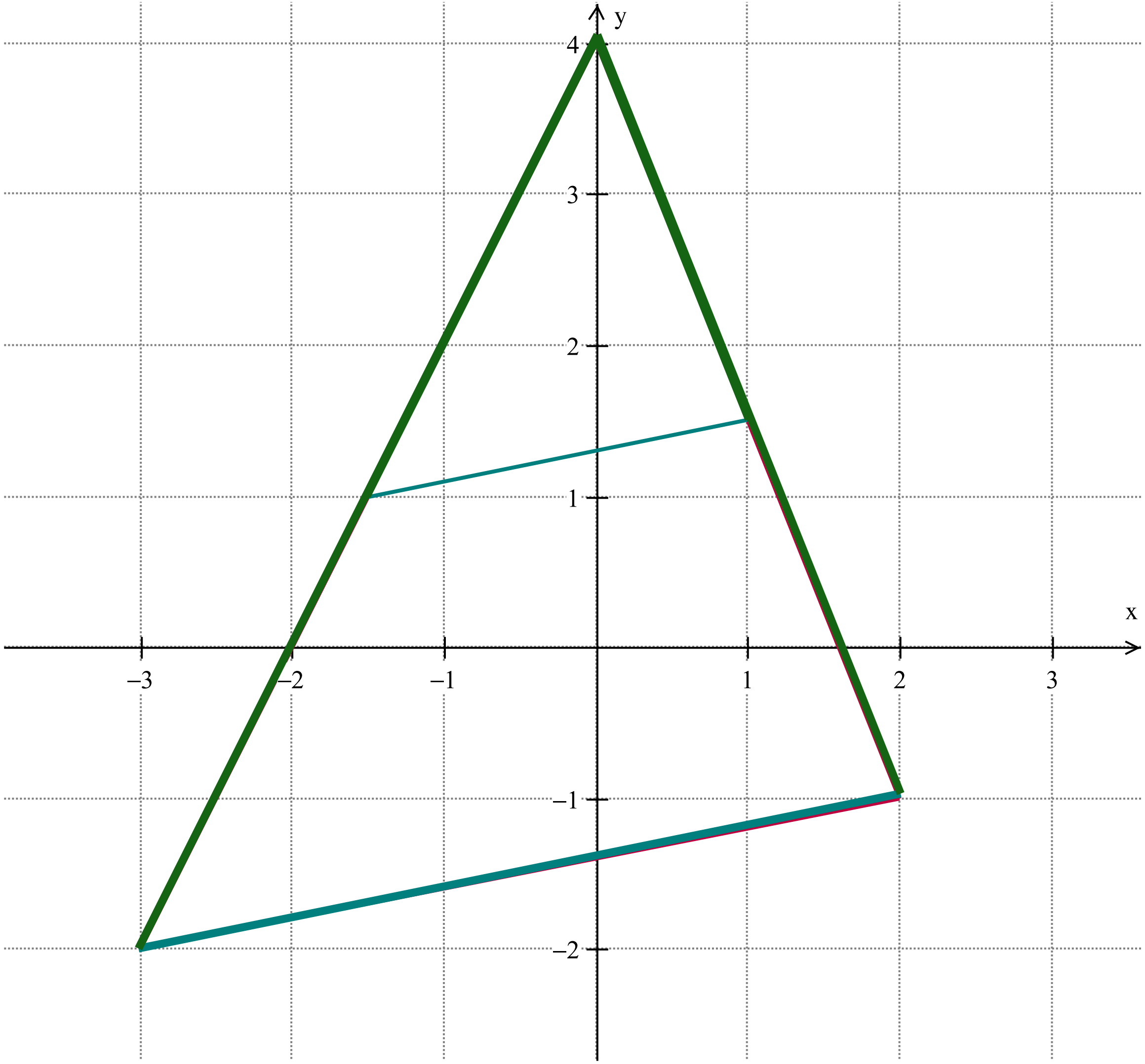


The segment connecting these two midpoints is called the *Midsegment*

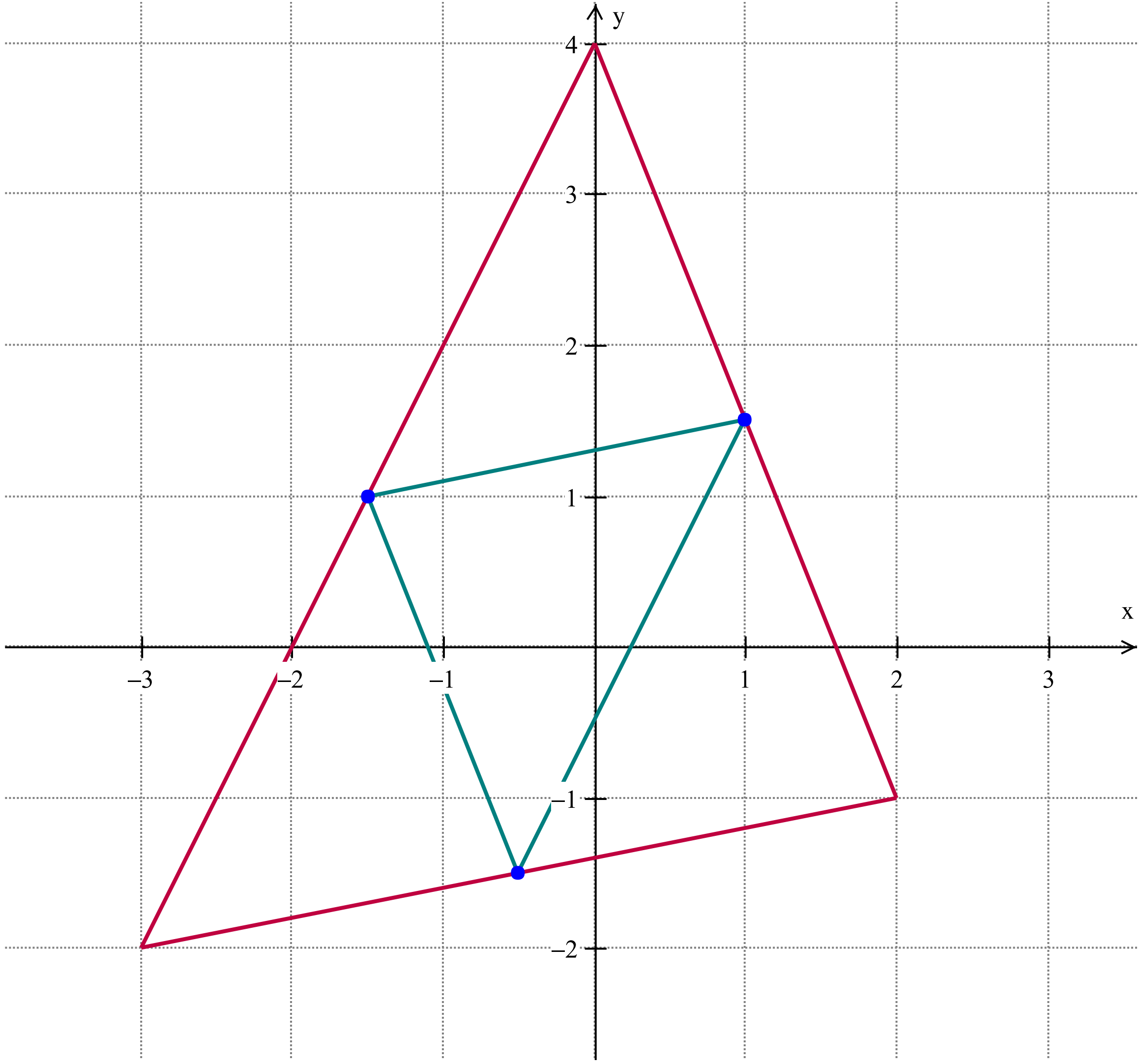



y
x
4
3
2
1
−1
−2
−3
−2
−1
1
2
3

Notice the way in which it divides the triangle

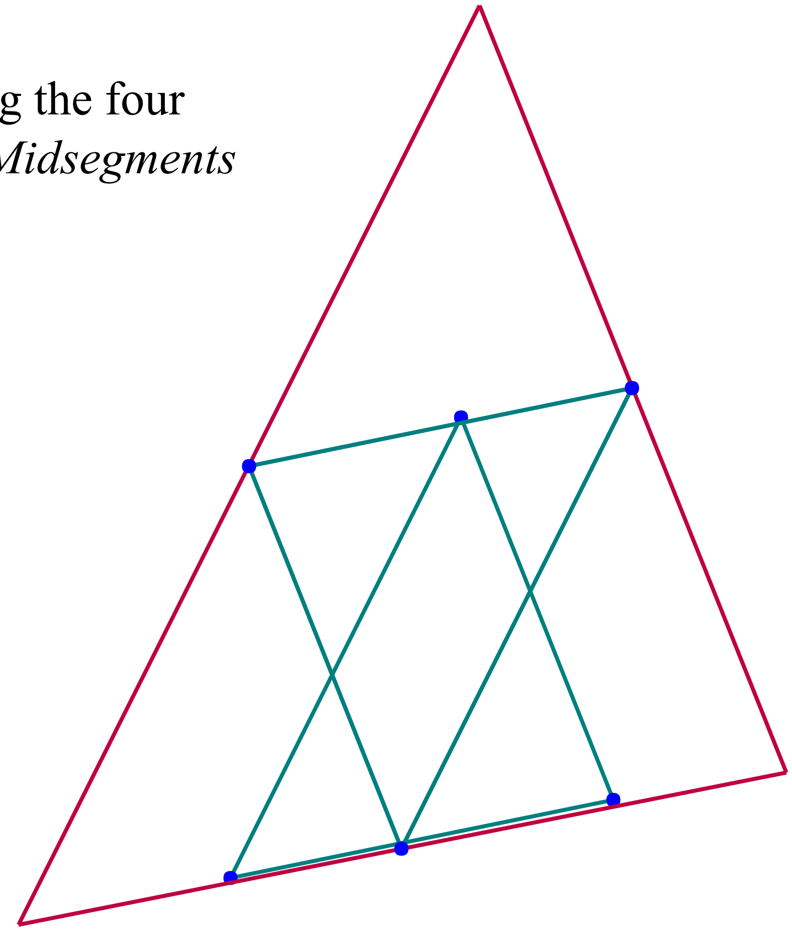


Through any triangle can be drawn three *Midsegments*



Notice also the apparent similarity among the four smaller interior triangles created by the *Midsegments*

We will look at their similarity shortly



Some things to know about midsegments:

$$AB = 2FE$$

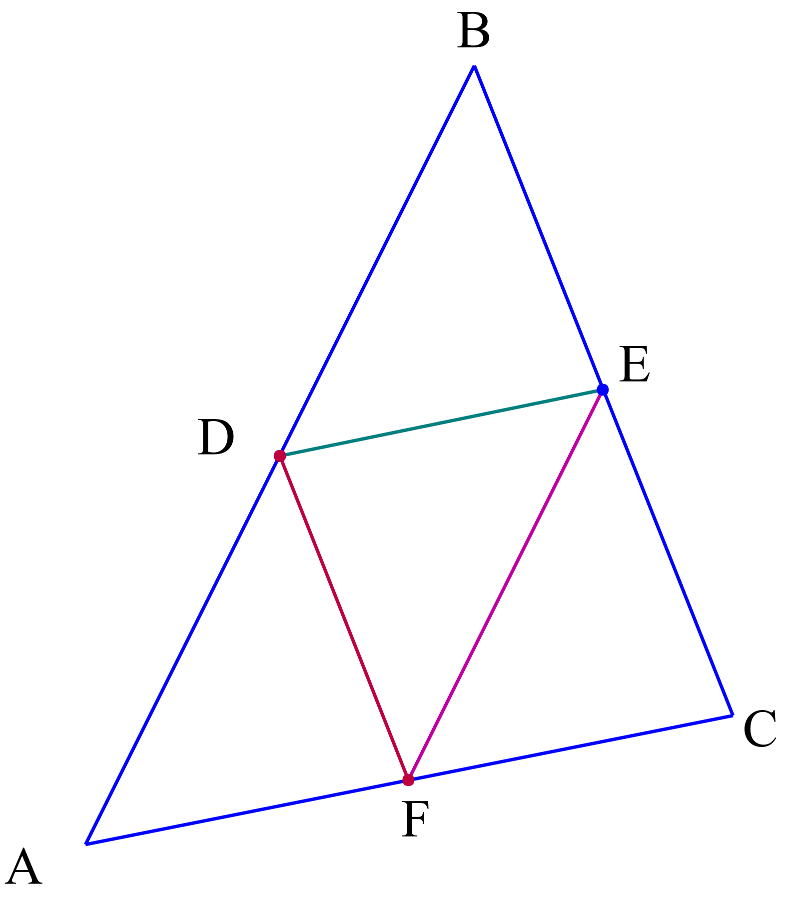
$$BC = 2DF$$

$$AC = 2DE$$

$$\overline{AB} \parallel \overline{FE}$$

$$\overline{BC} \parallel \overline{DF}$$

$$\overline{AC} \parallel \overline{DE}$$



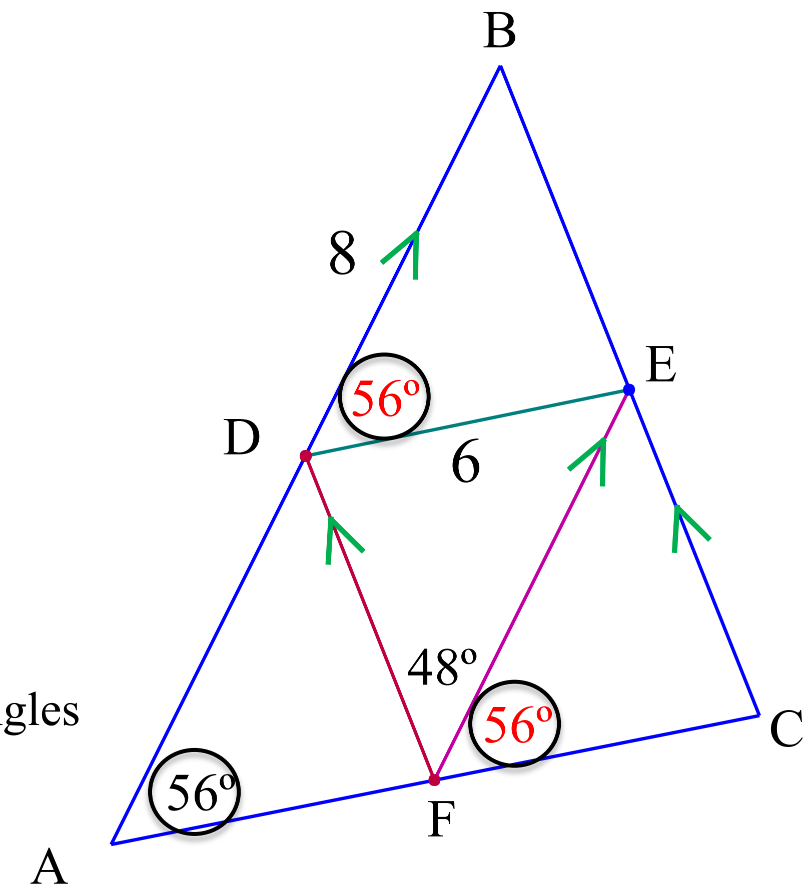
Recall what parallel lines tell you about the relationship among certain angles

$\overline{DE}, \overline{EF}, \overline{DF}$ are all midsegments

Find the other lengths and angles

Notice all the parallel lines

Corresponding Angles



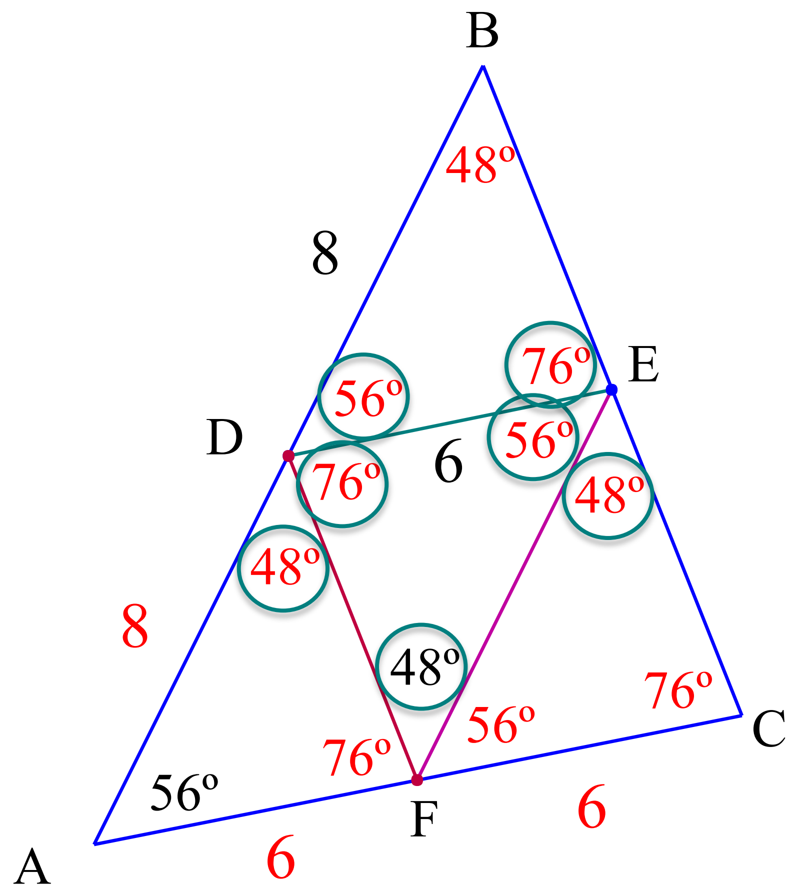
$\overline{DE}, \overline{EF}, \overline{DF}$ are all midsegments

Find the other lengths and angles

Notice all the parallel lines

Since the midsegment is a bisector…

Alternate Interior Angles

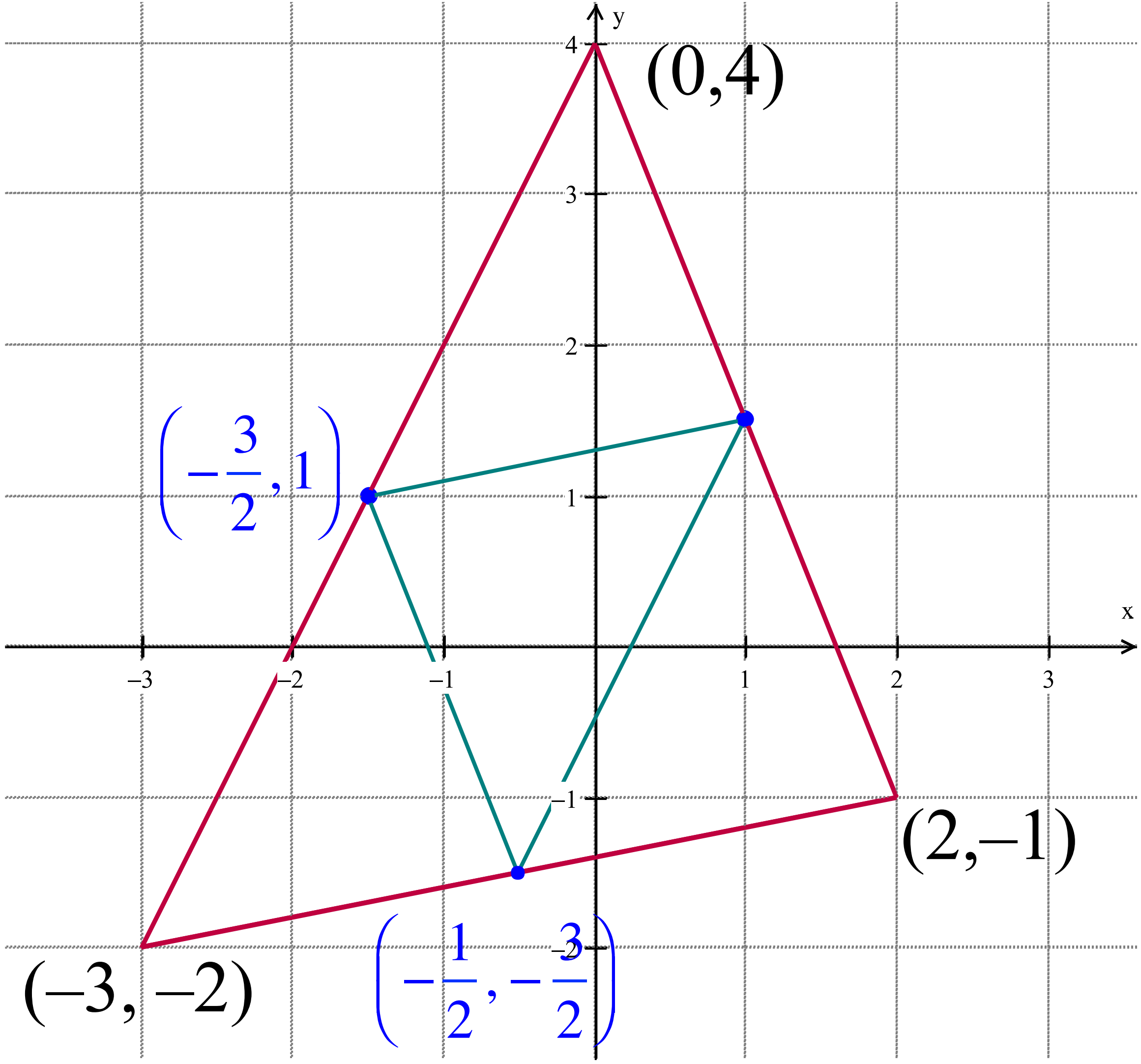


Completing the middle triangle

Recall the **Midpoint Formula**

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

$$\left(\frac{-3+0}{2},\frac{-2+4}{2}\right)=\left(-\frac{3}{2},\frac{2}{2}\right)$$



$$\left(\frac{-3+2}{2},\frac{-2-1}{2}\right)=\left(-\frac{1}{2},-\frac{3}{2}\right)$$

The last midpoint will be discussed in class next time