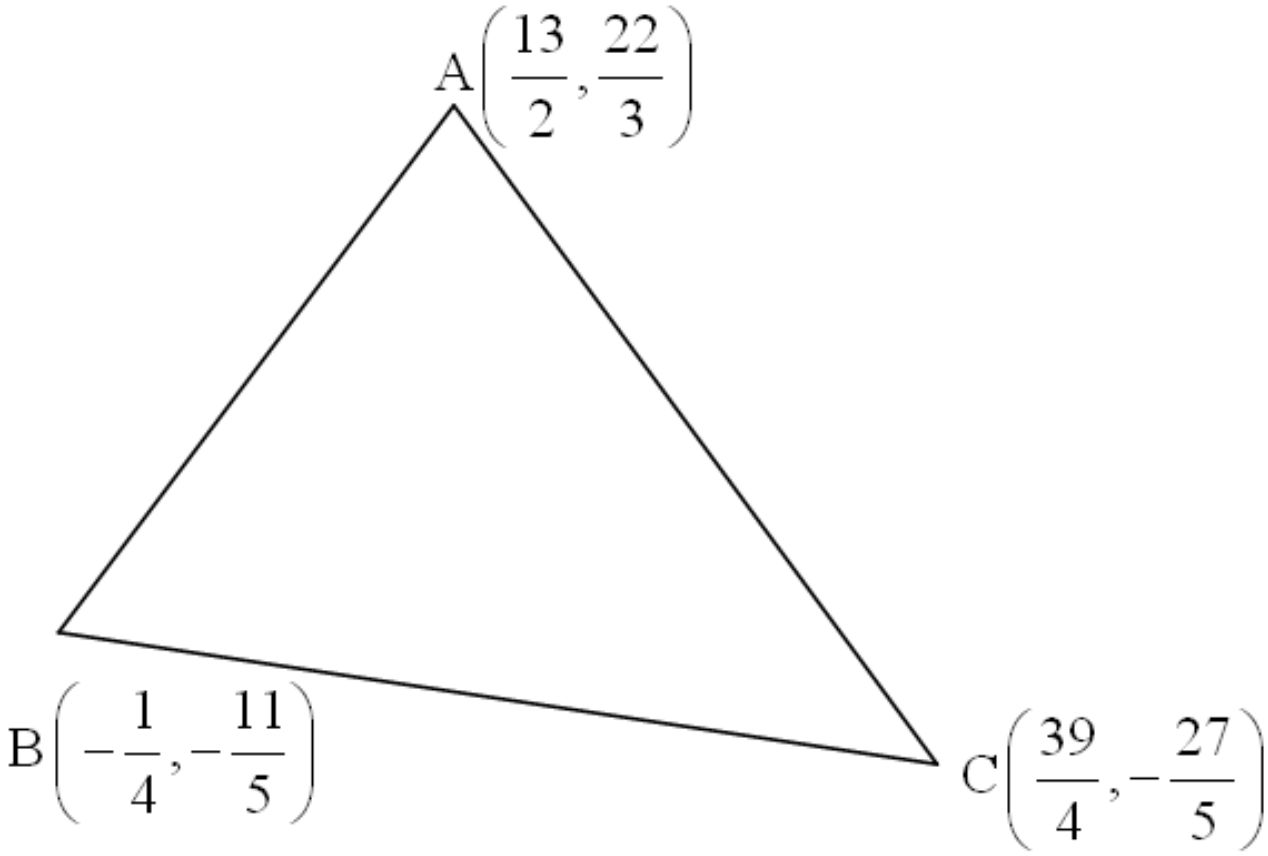
1. ΔABC is isosceles with vertex $\angle A$ and $\angle$ bisector $\overline{AD}$. If $m\angle BAD = 5x + 1$, $BD = 3x - 4$, $m\angle ADC = 8x + 8z - 6$, $m\angle DAC = 16y - 1$ and $DC = 8y - 2$,
Find x, y, and z.

2. Δ**RED has vertices R(6, 4), E(–6, 1) and D** $\left(2, -\frac{11}{2}\right)$**. Determine the coordinates of point X on** $\overline{ER}$ **so that** $\overline{DX}$ **is an altitude of** Δ**RED.**

3. List the angles of ΔABC in order from greatest to least.



4. List the sides of ΔEFG in order from least to greatest if $m\angle E = 17x - 8$, $m\angle F = 11x + 6$, and $m\angle G = 14x - 10$.

5. In ΔABC, $\overline{AD}$ is an altitude. If AC = $2x-5$, DC = $x-1$, and AD = $x+2$ find x.

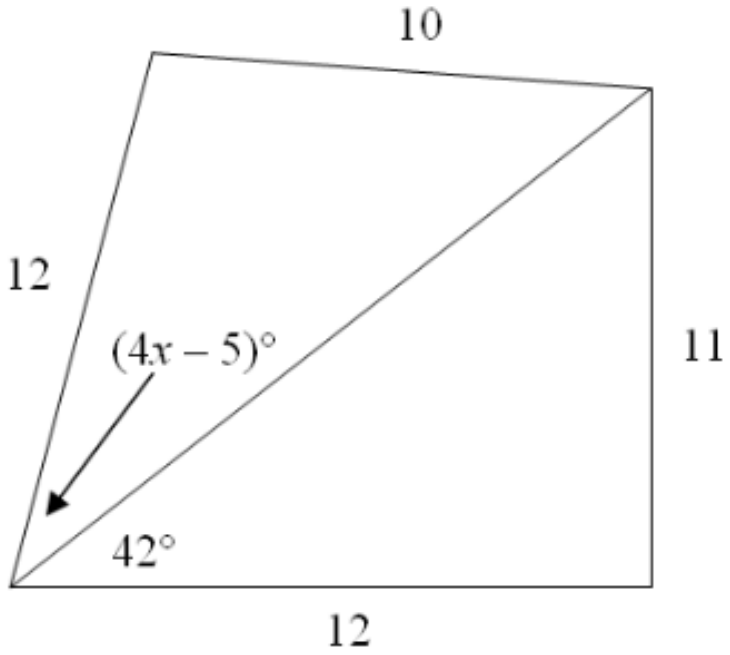
6. One side of an isosceles triangle (not an equilateral triangle) is 18 cm.
You are given the fact that the base is longer than the legs.
What, if anything, can you determine about the lengths of the other two sides
by using the Δ Inequality Theorem.
(Hint: Keep in mind that the given side that is 18 cm can be either a leg or the base.
You have to account for both of these cases in your answer.)

7. **The measures of two sides of a triangle are $\frac{223}{17}$ and $\frac{311}{19}$. Between what two numbers must the third side fall? Express your answers as fractions.**

8. **Is it possible to have a triangle with the following side lengths:** $\left(\sqrt{22},\sqrt{31},\sqrt{105}\right)$ **?**

   Justify your answer.

9. Write an inequality or a pair of inequalities to describe the possible values of x.



10. Write an inequality or a pair of inequalities to describe the possible values of x.