Math 1316: 2-15 Worksheet

February 15, 2022

1. We've been looking at examples with non-right triangles, but if the law of cosines works for *all* triangles it should work for right triangles. Think of a right triangle with unknown sides a, b, and c and unknown angles α and β. (The third angle isn't unknown—you know it's 90°.) Think about what the law of cosines says about this right triangle, using what you know about the value of $\cos 90°$ to simplify the equations. What do you get?

2. A triangle has sides of length 10, 20, and 25. Use the law of cosines to find the angles of the triangle.

3. A triangle has an angle of 30° flanked by sides of length 10 and 15. Use the law of cosines to find the side length of the third side. Is it possible to also solve this using the law of sines, or must you use the law of cosines? If you can use both, which do you think is the better method for this problem?

4. Now that you know the lengths of all sides for the triangle from the previous problem, use the law of cosines to find the missing angles. Is it possible to also solve this using the law of sines? If so, which method do you think is better for this problem?