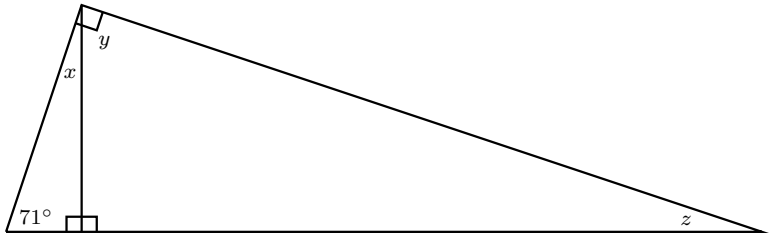
Name: _____

MATH 307
Spring 2023
HW 10: Due 04/14

"There is geometry in the humming of the strings; there is music in the spacing of the spheres."

–Pythagoras

Problem 1. (10pt) Find the angles marked x, y, and z in the triangle given below.



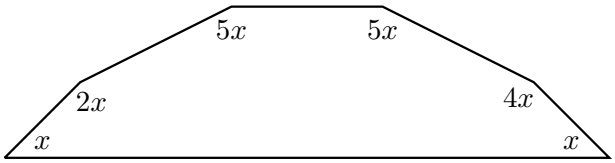
Solution. The sum of the angles in a triangle is $180°$. But we know the sum of the angles of the leftmost triangle is $71° + 90° + x = 180°$. But then $x = 19°$. But we know that angle x and y are complementary, i.e. $x + y = 90°$. Then we know $19° + y = 90°$. This implies that $y = 71°$. But we know that the sum of the angles in the rightmost triangle is $90° + z + 71°$. This implies that $z = 19°$. Therefore, we have...

$$x = 19°$$

$$y = 71°$$

$$z = 19°$$

Problem 2. (10pt) Find x in the following figure:



Problem 3. (10pt) A simple closed curve is plotted below. Determine whether the red point is located on the interior or the exterior of the curve. Be sure to justify your answer.