Problem of the Week Week 6, Due October 14th 11:59pm NAME:_____

NAU Email:_____

Please write clean, neat and complete solutions to the problem in order to recieve full credit. Your job is to convince me, or really anybody who reads this document, that you understand the problem and are able to communicate what you are thinking. Please submit your solutions through Gradescope (https://www.gradescope.com) by the indicated deadline. You might need to create an account with your NAU email. To enroll in the Problem of the Week course use entry code: NYZ56P. Good luck and have fun!

Problem. *Pythagoras Tree*
The growth of an isosceles Pythagoras tree has the following pattern: In the first year, the tree grows its trunk, which is a square. In the second year, an isosceles right-angled triangle grows on top such that its hypotenuse is the top side of the square, and then the first two branches, also square in shape, grow from the legs of the triangle. Then this pattern repeats every year, that is, an isosceles right triangle grows on top of each branch and its legs grow two new square branches. Given that the trunk (i.e. the first square) is 8 meters wide, calculate the height and width of the tree at the end of the fourth year.