

Name: _____

Directions: All questions require explanation in English sentences.

1. [5 points] Let $x = \sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}}$. Determine the value of x .

2. [5 points] Fill in the blanks and complete the following proof. You may use results proved in class without additional proof.

Theorem 1. *Let t be an irrational number and let w be a real number. At least one of the following two numbers is irrational: $t + w$, and $t - w$.*

Proof: Suppose for a contradiction that $t + w$ is _____
[circle one: and/or] $t - w$ is _____. Since the _____
numbers are closed under _____, we have that $(t + w) + (t - w)$ is
_____.

[Complete the proof here]

□