

Test 2 Reflection

1. The work done on this test demonstrates applying the general heat conduction equation with variable thermal conductivity. The problem requires applying insulated boundary conditions and convective heat transfer boundary conditions at the outer and inner surfaces. Navigating COMSOL and knowing how to input these conditions helped me better familiarize myself with the steps to solve for my solution.
2. My Problem 1 solution was correct. My 2nd Problem was mostly correct except for my temperature graph. If I were to take this test again, I would rest my model and reapply the conditions. Advice I would give is to do more COMSOL practice.
3. My grade should be an 86% based on how I graded against the given rubric. My strength was using integration for my first problem, and my weakness was my ability to apply correct input conditions required with 100 % accuracy.
4.
 - a. I struggled with my temperature graph, my line curvature matched but did not fully align on the y axis. I tried to look at previous COMSOL lectures and assignments to see what I was doing wrong with no success.
 - b. I made sure to reference the Fall solutions to ensure I was following the rubric as intended. I also had notes from past assignments and lectures available to help me ensure my procedure was headed in the correct direction for my solution.
 - c. I learned how to solve problems where thermal conductivity changes as a function of radius and how to use COMSOL for FEA.
 - d. Engineers apply these conductivity and heat generation concepts when designing high-tech aerospace components and parts.
 - e. If I am ever given the opportunity to do design work for the HVAC company I am employed at, I will need to apply this to my system design.
 - f. HVAC requires advanced duct work and insulated systems so knowing the heat conduction, convection, and heat generation is very critical.
 - g. I might need to work on a new product design for my company, and I assume that I will need to run these calculations when designing new concepts.
 - h. I have not been required to do these calculations at my job but having a basic idea of the heat transfer process is very beneficial when troubleshooting performance on the test stand.
 - i. I identified the proper procedure for the problem given to me and executed my calculations as expected. My last test I was missing critical information when performing calculations.
 - j. As mentioned previously, these concepts directly impact my career with HVAC.

