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MET 330

Test 3 reflections

28 November 2021

1) The test demonstrated our use of Bernoulli's equation in both part a and part b. We also used our knowledge on how to compute friction losses in pipes for series and parallel systems. Fluid dynamics were used for many different pipes and fittings and fluid properties were important to understand for the design considerations.

2) A) My part one appears to be nearly the same as the answer key. I solved my part 1 using feet, and the solution was done in meters. I used online converters to compare my solutions and other than some rounding differences, they were the same. I did notice that I solved for the losses and the power slightly differently. I put off of the losses for the 4" pipe in one equation and all of the losses for the 3" pipe in another, but still came up with the same solution when they were combined. For power, I used the power equation first, and then used that for the numerator of the efficiency equation to find the total power at 70% efficiency.

   B) Part B is a different story. After asking a few questions, I was able to finally get on the right track and approach the problem the correct way, however I did not successfully complete it. For starters, by Bernoulli's equation was wrong. I used v^2/2g on the LHS when it should have been hA. I did not have all of the losses, but I did include most of them and substituted for all of the v2/2g factors using 16Q^2/pi^2D^2. I included the conservation of mass equation which was crucial for simplifying the equations. I did not realize that pump power was used, and I never got to the point of having the correct equations to use in excel. I started an excel sheet, but due to the incorrectness of my problem, I was not able to use it to find the solution. I think a lot of my confusion could have been avoided had I used the correct form of Bernoulli's equation.

3) 1.
   a) 1/5
   b) 1/5
   c) 1/5
   d) 1/5

   2.
   a) 0.5/7
   b) 0.75/7

c) 1/7
d) 0.5/7
e) 0/7
f) 0/7

Assuming I met the standards for all of the writing rubric:
Final grade: (90/2)*(5/5 + 2.75/7) = 62.68/90 = 69.6%
With homework: 62.68 + 9.5 = 72.18/100 = 72.18%

My weakness was DEFINITELY part b. I was working on it and wondered how I had gotten this far in fluid mechanics or engineering school. However, I think that I really was overthinking somewhat. I approached the problem completely wring the first time, which made me super confused, so by the time I asked the professor what was wrong and went to redo it, I was mentally overwhelmed and exhausted. However, I am super glad that I was able to really understand part a so that my struggles in part b did not completely sink my grade.

4) a) I would say my biggest challenges were making sure I had all the necessary simple equations/variables for part a, and the entirety of part b. Once I found all the necessary equations for part a, it was simpler to complete just happened to be a little time consuming. For part b, I began the problem completely wrong the first time. I should have done a better job of following the 3c example that it was most like. When I got really stuck with no end in sight, I reached out to the professor, and he was able to get me back on track so that I at least did part of the procedure correctly.

b) I chose to work on this test a little at a time, which I hoped would help. I did not anticipate all the struggling I had on part b, so I still ended up spending way longer than I expected on it on Tuesday, the exact thing I wanted to avoid. If I could have changed anything it would have been that I did more of the test over the weekend to allow for more time when I struggled.

c) Besides all the ones listed in part one, and all of the more minor things that we used to complete the test, I learned that I need to allow myself more time to complete assignments like this one that I know could be challenging. If I did more work earlier, I would not become so overwhelmed and have more time to ask questions to help fix my mistakes.

d) I can see the excel being the most valuable. It can be used for the economical aspect of engineering such as cost analysis, incomes, taxes, etc. Excel is also very useful for trying multiple scenarios quickly like should have been used in part b.

e) I have already used similar concepts in excel in my engineering economics class and fluids lab. I also used some of the same equations in my fluids lab.

f) yes. Many aspects of this class will be valuable in my future career. Not only the concepts of fluid mechanics, but also understanding the use of excel and things like time management and organization.

g) These skills will be used to finish the last of my fluids labs, but they will also be beneficial if I work in any manufacturing setting where a fluid in a pipe system with valves, fittings, etc is used.

h) yes, both my fluids lab and engineering economics

i) I think I improved the most in being able to research notes/the book to find what I needed and convert them as necessary. I had always struggled with making sure I had all necessary information to complete a problem, and I think with this test I had finally done it enough that I was successful.

j) I think how it will intersect with my career depends on what engineering field I go into and as of right now, I have no idea what that will be (even though I wish I knew).

k) Lots of time, I would say at least 12 hours. I would work more over the weekend and Monday so that if I had problems, I would have had more time to ask questions in order to fix them.