

Dario Baxter

Test 3 Reflection

This test demonstrates my work towards Compute friction losses in pipes for a variety of configurations (series, parallel, network, etc.). Identify and solve for different very specific industrial problems, such as, open-channel flow, cavitation, water hammer, drag, lift, forces in pipes, and learn about different instruments to measure fluid flow quantities such as, pressure, fluid velocity, flow velocity, etc.

On problem 1, I got this problem wrong due to over thinking and doubting myself. I forgot to finish the equation and add the force to both sections of pipe.

On problem 2, I got this problem wrong due to not paying attention to what I was writing. Instead of using $9h$ as my area I wrote down $2h$ and I forgot to determine if it was critical or not.

On problem 3, I got this problem correct, though my answer is slightly lower due to rounding.

On problem 4, I got this problem wrong, I correctly used Bernoulli's equation to find V_3 and used the right equations to find V_2 and Q . I was correct in my decision to use Bernoulli's equation to find P_2 , but I didn't use it correctly. It looks like the force direction equation I used would have worked if I had gotten the previous information correct. I used the correct formula for resultant force. I did not calculate the direction. It seems like the main error comes from my incorrect use of Bernoulli's equation to find P_2 .

On problem 5, I got this problem wrong because I misplaced a 0. I put 0.997 instead of .0997.

Apart from problem 3 and 4, all my mistakes were due to me not paying attention to what I was writing down. If I took this test again, I would triple check my work and make sure everything made sense because after looking through the test again the mistakes I made in 1, 2, and 5 were very obvious to me.

PROBLEM 1)

- | | |
|-----------------------------------|----------------|
| 1. Moment with respect to A | 1/5 out of 1/5 |
| 2. Correct distances | 1/5 out of 1/5 |
| 3. Correct Cd using Re and forces | 2/5 out of 2/5 |
| 4. Results | 0/5 out of 1/5 |

TOTAL

4/5 out of 5/5

PROBLEM 2)

- | | |
|-------------------------------------------|----------------|
| 1. Correct Q equations (look at constant) | 1/6 out of 1/6 |
| 2. Correct A and Hydraulic radius R | 1/6 out of 1/6 |
| 3. Solving by iteration | 2/6 out of 2/6 |
| 4. Is it critical? | 0/6 out of 1/6 |
| 5. Results | 0/6 out of 1/6 |

TOTAL

4/6 out of 6/6

PROBLEM 3)

- | | |
|--------------------------------|----------------|
| 1. Correct eq for Q for nozzle | 1/5 out of 1/5 |
| 2. Use Re to get C | 1/5 out of 1/5 |
| 3. Solving by "h" | 2/5 out of 2/5 |
| 4. Results | 1/5 out of 1/5 |

TOTAL

5/5 out of 5/5

PROBLEM 4)

- | | |
|--------------------------------------------|----------------|
| 1. Compute pressures using Bernoulli's | 1/7 out of 1/7 |
| 2. Compute height with length | 1/7 out of 1/7 |
| 3. Appropriate control volume? | 1/7 out of 1/7 |
| 4. Rx (be careful with velocity direction) | 0/7 out of 1/7 |
| 5. Ry (be careful with velocity direction) | 0/7 out of 1/7 |
| 6. Compute Q with Bernoulli's | 1/7 out of 1/7 |
| 7. Results | 0/7 out of 1/7 |

TOTAL

4/7 out of 7/7

PROBLEM 5)

- | | |
|--------------------------------------|----------------|
| 1. Correct C (be careful with units) | 1/4 out of 2/4 |
| 2. deltaP | 1/4 out of 1/4 |
| 3. Results | 0/4 out of 1/4 |

TOTAL

2/4 out of 4/4

FINAL GRADE: (if everything is correct)

$$(90/5) * (4/5 + 4/6 + 5/5 + 4/7 + 2/4) = 64$$

I did not encounter any issues with completing this test. To ensure I was able to complete this test I downloaded it the day it was made available and looked it over. I started it the next day and worked on it a little everyday and reading through the book as I went along. If I could change anything it would be that I went back through the test step by step, because I made some very simple mistakes, like misplacing a decimal and not answering the full problem statement. Except for problem 4, I think I could have gotten all the other questions completely correct. Unfortunately, I've always had a habit of making these kinds of mistakes on tests. During this module I've learned how to solve problems related to water hammer, drag, and forces acting in pipes. I also learned about different types of instruments used to measure fluid flow quantities. I currently work on the electrical systems of hydro power plants, so when I move to the mechanical systems, this information will become a daily part of my life. I have yet to use any of these concepts I've learned so far. I feel I was most successful in understanding what I needed to do to solve the problems. I really need to improve my attention to details. As of now I work in the electrical department so most of this won't be used until I move to the mechanical department. I spent several hours completing this test. Most of my time was spent on problem 4. I would not do anything differently other than paying closer to the details and what I write down. These were my biggest issues on this test.