FM Exam 3 Test Reflection

In Problem 1, I encountered issues with calculating the distances and determining the correct drag coefficient (Cd) using Reynolds number (Re) and forces. These mistakes occurred because I hurried through the problem and needed to verify my distance calculations thoroughly. I also needed to fully understand the application of the Reynolds number in finding the drag coefficient. Moving forward, I will double-check all distance measurements and calculations, while also reviewing fluid dynamics concepts and practicing more problems involving Reynolds number and drag coefficient calculations to strengthen my understanding.

For Problem 2, my Q equations were incomplete, and I struggled with determining the hydraulic radius and whether the flow was critical. These issues were key in solving this problem. I was unsure about the constants to use in the equations and did not fully grasp how to calculate the hydraulic radius and assess flow conditions. To improve, I will need to review the derivation of Q equations and fully grasp the roles of each constant.

In Problem 3, I provided partial equations for Q and incorrect final results. This confused me because I thought I would at least get this one right. I discovered that i needed to structure my focus on understanding the entire process of using orifice plates and manometers to measure flow rates. This problem reminded me of the lab that I did which helped me solve this a little more.

In Problem 4, my Bernoulli's calculations were incomplete, and I was unclear about the appropriate control volume. I also made mistakes in considering the velocity directions for Rx and Ry. These errors occurred because I neglected to consider all aspects of Bernoulli's equation and the control volume, on top of that I misinterpreted the directions of the velocities. Improving my use of this equation has been a struggle for me, just because I don't know how to completely apply it. I feel like if I sat with this evaluation for longer I would be able to know how to properly apply it

For Problem 5, I mishandled units and made mistakes in calculating delta P. These issues arose from carelessness with unit conversions and missing some steps in the delta P calculation. Based on the writing rubric provided in the test and my solutions, I would grade myself a 4/5. I feel like there is always room for improvement.

If I had the opportunity to retake the test, I would give myself the following advice: take my time to carefully read each problem and understand the requirements before starting the calculations, regularly double-check my work, thoroughly review and practice the steps in class, and problem types before the test, and seek clarification on any confusing concepts or problems beforehand. Through this test, I have learned the importance of careful consideration of units and how to properly use what is given on the problem. Engineers use these concepts in mechanical

engineering, where they develop fluid transport systems, HVAC systems, and machinery involving fluid flows. If these concepts are applied accurately, engineers can create efficient, safe, and sustainable solutions to real-world problems.