Fundamentals of Fluid Mechanics B Questions and Answers

Question by AME536A Student

In HW 8 Q1, I'm using the mass conservation equation and integrate over y to get an expression for v, so that I can finally find the vorticity vector component ω_z *. The expression I end up with contains terms* $-y^4$ *and* y^2 *. Is that correct?*

Yes, the logic seems correct.

Question by AME536B Student

Would it be possible to get our finals back? It will help preparing for the qualifying exam. Thanks!

Will do.

Question by AME536A Student

Question about Homework 2 Problem 4:
The problem asks us to start from the Navier-stokes equation and prove that it corresponds to a slightly modified Navier-stokes equation. From the tables, the Navier-Stokes equation is:
$\rho(\frac{\partial v}{\partial t} + u\frac{\partial v}{\partial x} + v\frac{\partial v}{\partial y} + w\frac{\partial v}{\partial z}) = -\frac{\partial P}{\partial y} + \mu\frac{\partial^2 v}{\partial x^2} + \mu\frac{\partial^2 v}{\partial y^2} + \mu\frac{\partial^2 v}{\partial z^2} + B_y$
The endpoint for our derivation was given to be:
$\rho(\frac{\partial v}{\partial t} + u\frac{\partial v}{\partial x} + v\frac{\partial v}{\partial y} + w\frac{\partial v}{\partial z}) = -\frac{\partial P}{\partial y} + \frac{a}{2}\frac{\partial^2 v}{\partial x^2} + \frac{a}{2}\frac{\partial^2 v}{\partial y^2} + \frac{a}{2}\frac{\partial^2 v}{\partial z^2}$
Comparing the two, the only differences is the Body Force was deemed negligible in the derived equation, and μ *was substituted with* $\frac{a}{2}$ *. I understand you don't want us to just say that "a" is an arbitrary constant used in place for* μ *, (especially after the derivation made in class from mechanical pressure to that equation), but I am having a hard time seeing where you want us to go with this derivation. Can you please provide guidance?*

You should start from the non-constant-density and non-constant-viscosity Navier-Stokes equations. I clarified the question.

Question by AME536A Student

Dr.Parent. When will the final exam be performed? Will it be done between May 7-13, which is general exam period ?

Yes, it will be given in the time slot given by U of A. Check in the syllabus slides, there is a link to the U of A page that describes when the final exams should be given.

Question by AME536A Student

Is there a homework assignment this week?

No, it will be due the following Tuesday (2/23).

Question by AME536B Student

Would it be possible to make the Homework due Tomorrow (Tuesday 23rd) due on Thursday and could you make it due at midnight or at least at the start of class? Will all of your quizzes be on Thursdays rather than Tuesdays?

Assignment #3 is due tomorrow at 11:00. There may be quizzes on Tuesdays as well as Thursdays.