

AM40SD:Assessed Tutorials (Sheet 3) - 0%

Sean Tulloch, Aston University

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Questions

These tutorial sheets will be marked with feedback, but **do not** carry any weighting towards the final mark. **Please show all working.**

Deadline: 14 Dec 2012 (6PM) MB312A.

1) Provide the definitions of ϵ and δ in terms of λ .

[2 marks]

2) Apply operator, δ onto the equation,

$$\frac{\partial \tilde{u}}{\partial t} + ((\tilde{u} \cdot \nabla)(\vec{u}_0 + \tilde{u})) + (\vec{u}_0 \cdot \nabla)\tilde{u} = -\nabla\pi + \nu\nabla^2\vec{u}$$

This equation takes into consideration that there is basic flow, $\vec{u}_0 = (U_0(z), 0, 0)$ with the perturbations, $\tilde{u} = \delta\psi + \epsilon\phi$. Vector, $\lambda = (0, 0, 1)$. **Do not expand the non-linear terms.**

[68 marks]

OPTIONAL. 3) Try to expand the non-linear terms, and get as far as you can.

[130 marks]

[Total: 70 OR 200 marks]