

PROBLEM SET #3:

PLEASE: Staple your answers!

The suggested problems (from the book) are ones that you should look and make sure you know how to do them. These are not problems to be handed in.

PROBLEMS FROM THE BOOK:

Sec. 2.5:

Suggested (strongly): 19

Sec. 3.2: 4 7 16

Suggested: 1 5 6 8 9 11 14 15

Sec. 3.3: 9 12

Suggested: 1 3a 4 5 11 14 15a 16

Sec. 3.4: Skipp for now, will come back to it when doing chapter 8.

Sec. 4.1: 8 14

Suggested: 1b 1c 2 4 5 11 13

OTHER PROBLEMS

3.1) Consider the complex potential for a fluid given by  $w = A z^3$ , where  $A > 0$ :

(i) Find the potential "phi", the stream-function "psi" and the velocity field (u,v).

(ii) Sketch the streamlines and the velocity field in the complex plane.

(iii) Can you use this to find an incompressible, irrotational flow in a wedge (for some angle)?

What is the angle of the wedge you can do with this solution?

Can you think of a way to get solutions for other angles?

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The problems below were initially in the set, but have been removed from it an will show up in the next set.

PROBLEMS FROM THE BOOK:

Sec. 4.2: 10 14b

Suggested: 3b 7 8 9 11 14a 14c 16 17

Sec. 4.3: 2 7

Suggested: 1a 1e 1h 4 5 6 11

OTHER PROBLEMS

3.2) Find all the branch points for the following function and chose branch cuts to make it single valued:

$f(z) = \log(1 - \sqrt{z})$ .