

Homework 10

1. Section 5.5, part 2: problems 37, 40, 41, 43, 53, 57, 58, 59, 60, 61, 67, 69, 78.

These are harder problems in section 5.5. Try them yourself first. Hints for some problems will be provided a few days later on course homepage.

2. Section 5.6: problems 2, 33, 45, 112, 115, 117.

3. Chap 5, Additional and Advanced Exercises: problems 5, 21, 22, 24, 31.

4. Section 6.1: problems 5, 23, 55, 63.

5. Section 6.1, Example 2 (Lecture 18, page 4-5): Write $V = \int_{z_1}^{z_2} A(z)dz$. Find the limits of integration z_1, z_2 and give explicit formula of the area of cross-section $A(z)$. Need not evaluate the integral (since it involves integration by parts, not yet taught).

Hint: Which part of the boundary of the cross-section (i.e. region cut by $z = \text{constant}$) is from $\{x^2 + y^2 = 9\}$, $\{x = z\}$ or $\{z = 0\}$, respectively? Express the area of the cross-section in terms of z .