

Homework 12

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

2. Section 6.1, Example 2 (Lecture 21, page 2-3): 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 .

3. Section 6.2: problem 1, 27, 39.

4. Section 6.3: problems 9, 21, 25.