

Homework 13

Math 121A, Fall 2025.

Due: Wednesday, Dec 3, 11:59 PM

Unless otherwise stated, all solutions require clear, well-written justification. You must explicitly credit any collaborators for each problem.

Problem 1. Some inverse Laplace transforms (be sure to check out Example 7 in Chapter 14.7)

- (a) Boas Chapter 14: 7.56
- (b) Boas Chapter 14: 7.62

Problem 2. (a) Boas Chapter 8: 11.5 (Note: the label Lxx refers to the formula on page 469).

- (b) Boas Chapter 8: 11.7 (Note: the “ δ -function method” just means take a Laplace transform of both sides.)
- (c) Boas Chapter 8: 11.11

Problem 3. (a) Boas Chapter 8.12.2

- (b) Boas Chapter 8.12.6

Problem 4. The following two problems use the Green’s function we computed in class.

- (a) Boas Chapter 8.12.11
- (b) Boas Chapter 8.12.13

Problem 5. (a) Boas Chapter 9.2.5

- (b) Boas Chapter 9.2.9

Problem 6. Boas Chapter 9.3.17 (Need to distinguish the case whether the two points are on the same side of the cone. Only need to find the first integral. With cylindrical coordinates $dx^2 + dy^2 + dz^2 = dr^2 + r^2 d\theta^2 + dz^2$.)