**VANDERBILT UNIVERSITY**
**MATH 234 — INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS**
**SPRING 14.**

The equations mentioned in the questions below are from the notes on the Schrödinger equation posted on the course webpage.

**Question 1.** Explain why condition (1.3) is enough to ensure (1.2).

**Question 2.** Derive equations (2.8) and (2.9).

**Question 3.** Explain the condition (2.13), and derive (2.14) and (2.15).

**Question 4.** Derive equation (2.18), (2.21), and (2.23).

**Question 5.** Show that (2.26) diverges, unless (2.27) holds.

**Question 6.** Explain how (2.28) is obtained.

**Question 7.** Derive (2.35), giving precise conditions that guarantee that the integrals at $\infty$ vanish as stated in the text. Compare such conditions with (1.3), and comment whether they are reasonable.

**Question 8.** Derive (2.40), (2.44), and (2.46).

**Question 9.** Explain why $\gamma$ has to be a positive integer.

**Question 10.** In the table of section 3, where are the numerical factors, such as $\sqrt{\pi}$, coming from?