DUE: THURSDAY FEBRUARY 4, 2010

To receive full credit, you must exhibit the intermediate steps that lead you to your final results. The nth problem in Boas from section $a.b$ is designated by $a.b$–n.

1. Evaluate the integral
$$I_n = \int_0^\infty t^n e^{-kt^2}\, dt\,,$$
for $k > 0$ and $n > -1$. [*HINT:* By a suitable change of variables, show that I_n can be expressed in terms of the defining integral for the Gamma function.]

2. Boas, p. 540, problem 11.3–4.

3. Boas, p. 540, problem 11.3–17.

4. Boas, p. 542, problem 11.5–3.

5. Boas, p. 544, problem 11.7–2.

6. Boas, p. 544, problem 11.7–6.

7. Boas, p. 545, problem 11.7–9.

8. Boas, p. 551, problem 11.10–2.

9. Boas, p. 551, problem 11.10–3.

10. Boas, p. 554, problem 11.11–4.

11. Boas, p. 554, problem 11.11–8.

12. Boas, p. 560, problem 11.13–3.