

Problem Set 4, due Tuesday February 24.

Read Haberman Chapter 3.1-3.3.

3.2.2 a Deduce $\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} \dots$ (15pts)

3.3.1 a,b (10pts each)

3.3.2 d (10pts)

3.3.5 a (10pts)

3.3.6 b (10pts)

3.3.15 (15 pts)

Last problem (20pts) Solve the heat equation $u_t = u_{xx}$ on $0 < x < 1$ with $u(0, t) = 0$, $u(1, t) = 1$ and

$$u(x, 0) = f(x) = \begin{cases} \frac{5x}{2} & \text{if } 0 < x < \frac{2}{3} \\ 3 - 2x & \text{if } \frac{2}{3} < x < 1 \end{cases}$$