MATH 950, FALL 2015

Final Homework/Exam - due December 18:

- **Problem 1 - 6 points** Find explicit formulas for v and σ, so that $u(x,t) = v(x - \sigma t)$ is a traveling wave solution of the nonlinear diffusion equation

$$u_t - u_{xx} = f(u)$$

  where $f(z) = -2z^3 + 3z^2 - z$. Assume that

$$\lim_{s \to \infty} v = 1, \quad \lim_{s \to -\infty} v = 0, \quad , \quad \lim_{s \to \pm\infty} v' = 0.$$

- **Problem 2 - 6 points**
    Problem 1, section 1.3, page 41
- **Problem 3 - 6 points**
    Problem 1, section 3.2, page 90
- **Problem 4 - 6 points**
    Problem 4, section 5.3, page 158
- **Problem 5 - 6 points**
    Problem 5, section 12.3, page 380