

MATH 462 Section 0201 Fall 2018
PARTIAL DIFFERENTIAL EQUATIONS

HOMEWORK # 2 (due Th Sep 13)

1 (30 pts). Given the initial value problem

$$2u_t + x(1+t)u_x = u^2, \quad u(x, 0) = x.$$

- (a) Find the characteristics $x = x(t)$;
- (b) Find the solution $u(x, t)$;
- (c) Verify that the function $u(x, t)$ in (b) is a solution of the initial value problem.

2 (30 pts). Problem 10 in §1.2 of Strauss.

3 (20 pts). Problem 1 in §1.3 of Strauss.

4 (20 pts). Problem 2 in §1.3 of Strauss.