Homework Problems

1) Problems 2, 3, 11 from Strauss, Section 1.1.

2) Problems 1, 2, 3, 11 from Strauss, Section 1.2.

Practice Problems

1) For $xu_x - yu_y = 0$,

1. can you find a solution directly (hint: what combination of $x$ and $y$ would make the PDE true for any function of that combination?)?

2. Find the solution using the characteristics and plot the characteristics.

2) For the equation $(1 + x^2)u_x + u_y = 0$:

1. Find the general solution using characteristics and plot them.

2. Find the special solution that satisfies $u(0, y) = y^2$. 