CAAM 423/523 Partial Differential Equations I
MATH 423/513 Fall 2017

Homework 1, Due on Tuesday, September 5, 2017

1. *(Transport equation)* Solve the following initial value problem of the transport equation

$$u_t + 2u_x - 3u_y + 5u_z = 0, \quad u(x, y, z, t = 0) = e^{-x^2} \sin(2y + 3z^2).$$

2. *(Linear first order PDE)* Solve the initial value problem of the following PDE (problem 5(b) in section 3.5 of Evans book)

$$u_t + xu_x + 2yu_y = 3u, \quad u(x, y, t = 0) = g(x, y).$$

Due to Hurricane Harvey, problem 3-4 are postponed to homework 2. All requests on late submissions and extensions will be granted. Stay safe!