CAAM 336 · DIFFERENTIAL EQUATIONS

Homework 4

Posted Wednesday 15 January 2014. Due 1pm Monday 27 January 2014.

4. [25 points]

   (a) Is $v(x) = 1/x^2$ a solution of

   $$\frac{dv}{dx} + \frac{2}{x}v = 0?$$

   (b) Is $v(x,t) = t(t+x)$ a solution of

   $$\frac{\partial v}{\partial t} - 3\frac{\partial v}{\partial x} = x - t?$$

   (c) Is $u(x,t) = xe^t$ a solution of

   $$\frac{\partial u}{\partial t} - \frac{\partial}{\partial x}\left(2u\frac{\partial u}{\partial x}\right) = 0?$$