

CAAM 336 · DIFFERENTIAL EQUATIONS

Homework 4

Posted Wednesday 28 August 2013. Due 5pm Wednesday 5 September 2013.

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

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