Linear Operators

1. Show that \(Ly = Dy - xy^2\) is not a linear operator.

2. Find the general solution to \(y'' + (x + 1)y' + (x + 1)y = 0\).
   
   \textit{Hint:} This equation is factored on the bottom of p. 81 of the text. Use this factoring and the substitution \(u = (D + x)y\) to reduce the equation to a first order equation in \(u\), solve for \(u\), and then solve a first order linear equation for \(y\) once you have the formula for \(u\).