Worksheet 12
Due: Tuesday, December 2

1. Solve $y' + 2y = e^x$.
2. A tank initially contains 8 L of distilled water. A saline solution with a concentration of 2 g of salt per L flows into the tank at a rate of 4 L per minute. The mixture is then piped out at a rate of 2 L per minute. Let $S(t)$ be the amount of salt in the tank after t minutes.
   (a) Write an IVP for $S(t)$.
   (b) Solve the IVP.
3. Let $L = D^2 + xD + x^2$.
   (a) Compute $L(x)$.
   (b) Compute $L(e^{2x})$.
   (c) Compute $L(2x - 3e^{2x})$. (Remember L is linear.)