Lab 3 Expectations

Submit Plots: 1, 2, 3, 4 (2 graphs), 5

1. Use dfield and plot the chosen differential equation with at least 4 solutions and explanation about the theorems.
2. a) Use dfield and plot the given differential equation with at least 4 solutions. What kind of curves do they seem to be, and where do they appear to cross?
   b) Find the general solution to the given equation, and show that the curves do cross where you expected. Which of the two hypothesis isn't satisfied?
   c) Find the exact solution using x(1)=seed.
   d) Find the exact solution to x(0)=0 and relate your answer to the theorems.
   e) Find the exact solution using x(0)=seed and relate your answer to the theorems.
3. Why do you expect the solution to exist and be unique? Try to find x(2) and submit the graph you used. Write down your observations. Why can't you answer your boss's question?
4. Solve the IVP in #3. Make 2 distinct dfield plots with tracings as prescribed in the lab. What are the equations for t < 1 and t >= 1? Explain why this function satisfies the IVP.
5. Show that x(t)=0, 2, and 4 are solutions to the IVP. Determine if the IVP is bounded and, if so, specify the bounds. Using dfield plot the solution to the IVP. Explain if the graph supports your claim.