MATH 246 Homework 1.3 Justin Wyss-Gallifent

Directions:

- Work should be done neatly and on separate paper.
- Enough work must be shown so that the steps you are taking is clear.
- 1. Determine if each of the following is any of explicit, first order linear, and/or separable. It may be more than one type or none at all. No justification is required.
 - (a) y' = yt
 - (b) y' = y + t
 - (c) y' = y + yt
 - (d) y' = yy' + t
 - (e) y' = t
- 2. Explicitly solve the separable differential equation $y' = 3t^2e^y + e^y$.
- 3. Implicitly solve the separable differential equation $y' = \frac{x+1}{y+\cos y}$
- 4. Implicitly solve the separable differential equation y' = y(y+2). You will need partial fractions.
- 5. Explicitly solve the separable initial value problem $y' = \frac{\cos t}{y^2}$ with $y\left(\frac{\pi}{2}\right) = 2$.
- 6. Explicitly solve the separable initial value problem $y' = \frac{t+1}{2ty}$ with y(1) = 5. Assume t > 0.