1. Find all solutions to $\frac{dx}{dt} = r - x^2$ where $x(t) = c$ with c a constant (these are all of the equilibrium solutions).

2. Show the mathematical steps to find a solution to $\frac{dx}{dt} = 3x, x(0) = -5$.

3. Classify the stability of the equilibrium solutions of $\dfrac{dx}{dt} = 2x(x+1)(x-3)$.