1. [15 pts.] A cold beer initially at 35° F warms up to 52° F in five minutes while sitting in a room of temperature 86° F. How warm will the beer be if left out for 20 minutes?

2. [10 pts.] Find a general solution to $y'' + 2y' - y = 0$.

3. [10 pts.] Find a particular solution to $y'' + 2y' - y = e^{3t}$.

4. [10 pts.] Using the results of (2) and (3), write a general solution to $y'' + 2y' - y = e^{3t}$.

5. [10 pts.] Write the form of a particular solution for the differential equation $y'' - 2y' + y = 4te^t \cos t$. Do not evaluate any coefficients.