Please complete following problems. In these problems, sometimes it is easier to work with the ansatz $y = Ae^{i\omega t} + \bar{A}e^{-iwt}$.

1. Excise 3.1. (a) (10 points)
2. Excise 3.1 (d) (10 points)
3. Excise 3.17 (a) (10 points) (b) (10 points) (c) (extra credits, 10 points)