

MA212: Assignment # 3

Required Reading:

- Sections 17.1, 17.2, 2.2, and 2.3.

Any problems marked with * require the use of maple. All other problems are to be done by hand. Any problems marked with # can be submitted for review by the grader.

1. Textbook §17.1: 17, 18#, 30#, 37
2. Textbook §17.2: 2, 7, 10, 21, 26#, 33, 34# (Note for 1-10, polar form is $re^{i\theta}$. Note for 21-32, do not use the formulas in the book, use Euler's formula.)
3. Textbook §2.2: 6, 17, 24#, 25, 39/40 (*use maple to make plots for 39/40)
4. Textbook §2.3: 12#, 13, 17, 26#, 31
5. *# Find the eigenvectors and eigenvalues of the following matrix by hand.

$$\begin{bmatrix} 2 & 0 & 0 \\ 0 & -1 & a \\ 0 & 2 & -1 \end{bmatrix}$$

There will be different cases depending on the value of a . After you do this by hand, compare to the solution you get using Maple's command *Eigenvectors*. Does Maple's answer cover all of the cases you found?

6. *# Learn how to use Maple's command *dsolve*. Use it to solve $y' + e^{x^2}y = 0$ with $y(1) = 1$ and plot the result on the interval $x \in [0, 2]$.