Homework 3

Due September 27th on paper at the beginning of class. Justify your answers. Please let me know if you have a question or find a mistake. The book is `https://archive.org/details/complex-variables-2ed-dover-1999-fisher/page/n23/mode/2up`.

- Section 1.5 (page 55) # 23.
- Section 1.6 (page 74) # 9.
- Section 2.1 (page 83) # 1a, 1b. Use the formulas $\cos z = \frac{1}{2}(e^{iz} + e^{-iz})$ and $\sin z = \frac{1}{2i}(e^{iz} - e^{-iz})$.
- Nonbook problems:

  1. Evaluate $\int_\Gamma (e^z + \bar{z})dz$, where Γ is the line segment from 1 to i

  2. Use your answer to number 1. and Green's theorem to evaluate $\int_\Gamma (e^z + \bar{z})dz$, where Γ is the contour that follows the line segment from 1 to $2 + i$, then the line segment from $2 + i$ to $1 + 2i$, then the line segment from $1 + 2i$ back to i.