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MA 425/525
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Homework 3

Due September 25th 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`.

Do 1.4.10 from page 41 and 1.6.4, 1.6.5, 1.6.6, 1.6.9 from pages 73–74.

Also do the following problem:

1. Let $f(z) = e^z + \bar{z}$.
   (a) Evaluate $\int_\Gamma f(z)\,dz$, where Γ is the line segment from 1 to i
   (b) Use your answer to number 1 and Green's theorem to evaluate $\int_\Gamma f(z)\,dz$, 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.

   Hint: In case you have trouble using Green's theorem in such a way, you may consult the book `https://personal.math.ubc.ca/~CLP/CLP4/`. There are many exercises with solutions provided; see in particular Exercise 4.3.17b.