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[1]: import numpy as np
     import matplotlib as mpl
     %matplotlib inline
     from matplotlib import pyplot as plt
     from numpy import sin, cos, exp, pi, sqrt, log, linspace, meshgrid
     from mpmath import *
     from sympy import *
     init_printing()
     from IPython.display import display, HTML
```

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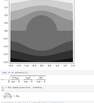

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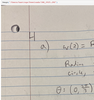

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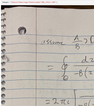

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(b) $\int_0 \frac{A}{A^2+B\cos\theta} \qquad \frac{A}{A+B\cos\theta}$

$$= \int_0^{2\pi} \frac{A}{A^2+B^2\cos^2\theta}\, d\theta + i \int_0^{2\pi} \frac{B\cos\theta}{A^2+B^2\cos^2\theta}\, d\theta$$

we know second term is zero since the integral is a real value by previous calculation.

$$A\int_0^{2\pi} \frac{1}{A^2+B^2\cos^2\theta}\, d\theta$$ is odd by inspection

(c) to decide which pole went in the integral path we had to assume $\left|\frac{A}{B}\right| > 0$

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