Complex Analysis I:
Problem Set VIII

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Abstract

This work contains the solutions to the problem set VIII of Complex Analysis I 2015 at Courant Institute of Mathematical Sciences.

Question 1. 273-12.

Solution.

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Question 287-1.

Solution. Observe that the given integral can be re-written as

$$\int_0^{2\pi} \frac{d\theta}{5+4\sin\theta} = \frac{1}{5}\int_0^{2\pi} \frac{d\theta}{1+\frac{4}{5}\sin\theta}$$

From the example 1 from pg.285 in the section 92, it follows that

$$\begin{aligned}\int_0^{2\pi} \frac{d\theta}{5+4\sin\theta} &= \frac{1}{5}\int_0^{2\pi} \frac{d\theta}{1+\frac{4}{5}\sin\theta} \\ &= \frac{1}{5}\frac{2\pi}{\sqrt{1-\frac{4}{5}^2}} \\ &=\end{aligned}$$