Oppgaver til øving 11

Martin Ludvigsen

October 22, 2020

Exercises from 10th edition Kreyzsig.

14.3

14.3:11

Integrate clockwise or as indicated.

$$\oint \frac{dz}{z^2+4}, \quad C : 4x^2 + (y-2)^2 = 4. \tag{1}$$

14.3:14

Integrate clockwise or as indicated.

$$\oint \frac{e^z}{ze^z - 2iz} dz, \quad C : |z| = 0.6. \tag{2}$$

14.4

14.4.9

Integrate. Hint: Begin by sketching the contour.

$$\oint \frac{\tan \pi z}{z^2} dz, \quad C \text{ is the clockwise ellipse } 16x^2 + y^2 = 1. \tag{3}$$

15.1

15.1:19

Is the given series conergent or divergent?

$$\sum_{n=0}^{\infty} \frac{i^n}{n^2 - i}. \tag{4}$$

15.1:24

Is the given series convergent or divergent?

$$\sum_{n=1}^{\infty} \frac{(3i)^n n!}{n^n} \tag{5}$$

15.2

15.2:8

Find the center and the radius of convergence.

$$\sum_{n=0}^{\infty} \frac{n^n}{n!}(z - \pi i)^n. \tag{6}$$

15.2:17

Find the center and the radius of convergence.

$$\sum_{n=1}^{\infty} \frac{3^n}{n(n+1)} z^{2n+1}. \tag{7}$$