

Quiz N°6 Math 302_131 (December 24, 2013)

KFUPM

Semester 131

Dept. Math. &Stat.

A.Y:2013/2014

Name:

ID:

Exercise 1. Find the principal value of the following power

$$(1+i)^{1+i}$$

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Exercise 2. Solve the equation

$$\sinh(z) = i\sqrt{5}$$

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Exercise 3. Compute the contour integral

$$\oint_{\mathcal{C}} \frac{e^{2z}}{z^4} dz,$$

where \mathcal{C} is the positively oriented circle $|z|=1$.

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Exercise 4.

- i. Find the Maclaurin expansion of the complex functions

$$f(z) = \frac{1}{(1-z)^2} \quad \text{and} \quad g(z) = \frac{1}{(1-z)^3}$$

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- ii. Find the Taylor expansion (about $z_0 = 1$) of the function

$$f(z) = \frac{z^2 + 2z + 3}{z + 2}$$