Budapest University of Technology and Economics

Basic Mathematics 2

Sample Test 2, 25%

Spring, 2016

1. Solve the trigonometric equation $\dfrac{(\sin x+\cos^2 x+1)\cdot\cos\dfrac{x}{2}}{1+\cos x}=0$. *6%*

2. Let $z_1=1+i,\quad z_2=-1+i\sqrt{3}$. Find $(z_1+z_2)^2$, $z_1{}^2\cdot z_2$, $\dfrac{z_1}{z_2}$, $(z_1)^8$. *6%*

3. The points $0,\quad -4+2i$ are two vertices of an equilateral triangle in the plane. Find the third vertex. *6%*

4. Prove that $z_1=-2i$ is a solution of the equation $z^3-8i=0$. Find the other solutions (in algebraic and trigonometric forms as well). *7%*

Marks (final, based on 4 tests, 2 Algebra, 2 Geometry):
-39 fail(1), 40-54 pass(2), 55-69 satisfactory(3), 70-84 good(4), 85- excellent(5)

90 minutes ***Good luck!***