

Eskişehir Osmangazi University - Electrical Engineering Department
Advanced Calculus
1st Midterm Examination - Summer 2012

!!! For each problem put the answer next to it !!!

1. [40 pts.] Evaluate the following (express the results in cartesian form):

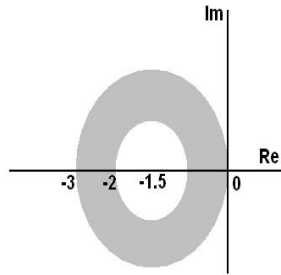
$\overline{(2+i)^3}$ **Ans.** $2 - 11i$

$\text{Log} e^{2+i}$ **Ans.** $2 + i$

$\sin(1 + 3i)$ **Ans.** $8.47 + 5.41i$

4^i **Ans.** $(0.184 + 0.983i)e^{2\pi n}, n = 0, \pm 1, \dots$

2. [20 pts.] Sketch $1 < |2z + 3| < 3$



3. [20 pts.] If exists, find derivative $\frac{df}{dz}$ of $f(z) = x^2 - y^2 + x + i2xy + iy + 3$
Ans. $2z + 1$

4. [20 pts.] Evaluate $\int_{\gamma} z dz$ where $\gamma : 2e^{i\theta}, 0 \leq \theta \leq 2\pi$ **Ans.** 0
A. Karamancioğlu