

Homework for Section 13.3 and Appendix A.3

Mathematics 114, Section 2

due Wednesday, November 20

Read Section 13.3 and Appendix A.3.

1. **Section 13.3:** 4, 11, 14, 20, 33, 44

2. Simplify:

(a) $(1 + i)(3 - 2i)$

(b) $\frac{2 + i}{i}$

(c) $\frac{1 - 2i}{2 + i}$

3. Find all solutions of the polynomial

$$r^4 + 5r^2 + 4 = 0$$

4. Use De Moivre's Theorem to find identities for $\cos 4\theta$ and $\sin 4\theta$ in terms of $\cos \theta$ and $\sin \theta$.

5. **Appendix A.3:** 2, 3, 7, 8, 12, 24, 27

6. (*The complex logarithm*) Solve the equation

$$e^{x+iy} = u + iv$$

for x and y in terms of u and v , using Euler's formula.

Make sure you can do the core problems.

(13.3 — 6,12,13,19,35,37,44; A.3 — 1-14,23,24,27,30).