

**Math 116, Homework 2, Prof. Sachs Due, Monday Feb. 14**

Complete the following problems, while also practicing on some routine problems from your calculus text:

**Problems from text:**

Section 6.3: Problems 10, 17, 49, pages 400 - 402

Section 6.4: Problems 5, 28, 50, pages 411-412

Also consider Euler's formula and using the binomial theorem as well, starting with the formula:

$$e^{3it} = (e^{it})^3 = (\cos t + i \sin t)^3$$

derive expressions for  $\cos(3t)$  and  $\sin(3t)$  in terms of  $\cos t$  and  $\sin t$ . Compare this with a more traditional derivation starting from  $\cos(3t) = \cos(t + 2t)$  and  $\sin(3t) = \sin(t + 2t)$  and using the addition formulas twice (or a double angle formula and the addition formula once). Which was easier? Which is more believable? Write a sentence or more.