

Math 116, Homework 1, Prof. Sachs Due, Monday Feb. 7

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

Problems from text:

Section 6.1: Problems 15, 22, 47, pages 379-381

Section 6.2: Problems 15, 28, pages 388-389

Section 6.8: Problems 37, 40 page 449

(Assuming we cover Euler's formula Wednesday): 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.