

ASSIGNMENT 6

Due Thursday, October 28, 2004

Problem 1: Recall that $\cos(b) - \cos(a) = -2 \sin\left(\frac{a+b}{2}\right) \sin\left(\frac{b-a}{2}\right)$. Use this to prove that

$$\sum_{k=1}^n \sin(kx) = \frac{\cos(x/2) - \cos\left(\left(n + \frac{1}{2}\right)x\right)}{2 \sin(x/2)}$$

for any positive integer, n and for any real, $x \notin \{\dots, -4\pi, -2\pi, 0, 2\pi, 4\pi, \dots\}$.

Problem 2: Exercise 6, page 105.

Problem 3: Exercise Exercise 10, page 105

Problem 4: Exercise 24, page 105.

Problem 5: Exercise 29, page 106.

Problem 6: Exercise 30, page 106.

Problem 7: Exercise 31, page 106.