Math 316 Homework 4

due Wednesday, 02/08

1. Find the Fourier series of the function f.

(a) $f(x) = \begin{cases} 0, & -\pi \le x < -\frac{\pi}{2} \\ 3, & -\frac{\pi}{2} \le x \le \frac{\pi}{2} \\ 0, & \frac{\pi}{2} < x \le \pi \end{cases}$

In (a) find a general formula for the coefficients and then write down the first 5 non-zero terms of the series.

(b) $f(x) = 2 + 4\cos(3x) + 7\sin(4x)$. No calculations are required here.

2. Is it true that the product of two $n \times n$ orthogonal matrices is orthogonal? *Justify your answer.*

*You do not need to submit problems marked by *. They have answers or solutions at the back of the book. Please note that similar problems or questions may appear on the tests.*

Section 6.2 True/False Questions (5-7, 10-13)*; Exercises **10**, 11(a)*, **12**.

Section 6.3 True/False Questions (4,7,8)*; Exercises 9*, **10**, 11(a)*, **12(a)**, **27(a)**.