Written Homework 4 Solutions

MA 4291 (Tilley)
C-Term 2022

Chapter 4 Section 38: 3, 4 (page 121)

Just turn in the problems in bold red font:

pg. 121: # **3**,**4**
pg. 125: # 5,**6**
pg. 135: # **1**,**3**,6,**7**,**10**
pg. 140: # 2,5,**6**,**8**
pg. 149: # 4,**5**
pg. 160: # 2,**4**

3. Show that if m and n are integers,

$$\int_0^{2\pi} e^{im\theta} e^{-in\theta}\, d\theta = \begin{cases} 0 & \text{when } m \neq n, \\ 2\pi & \text{when } m = n. \end{cases}$$

4. According to definition (2), Sec. 38, of definite integrals of complex-valued functions of a real variable,

$$\int_0^{\pi} e^{(1+i)x}\, dx = \int_0^{\pi} e^x \cos x\, dx + i \int_0^{\pi} e^x \sin x\, dx.$$