Due _____ . But I strongly recommend that you start working on it before _____

Show all work on a separate sheet of paper and attach it. Write only your resulting answers for #1-2 on this handout.

1. Integrate the following. Consider both cases of $n = 0$ or $n \neq 0$. [*Show all of your work on a separate sheet of paper.*]

(a). $\displaystyle\int_{-\pi}^{\pi} \sin(nx)\, dx = \begin{cases} \quad , & n \neq 0 \\ \quad , & n = 0 \end{cases}$

(b). $\displaystyle\int_{-\pi}^{\pi} \cos(nx)\, dx = \begin{cases} \quad , & n \neq 0 \\ \quad , & n = 0 \end{cases}$

2. Integrate the following. Consider both cases of $n = m$ or $n \neq m$. [*Show all of your work on a separate sheet of paper.*]

(a). $\displaystyle\int_{-\pi}^{\pi} \sin(nx)\cos(mx)\, dx = \begin{cases} \quad , & n \neq m \\ \quad , & n = m \end{cases}$

(b). $\displaystyle\int_{-\pi}^{\pi} \sin(nx)\sin(mx)\, dx = \begin{cases} \quad , & n \neq m \\ \quad , & n = m \end{cases}$

(c). $\displaystyle\int_{-\pi}^{\pi} \cos(nx)\cos(mx)\, dx = \begin{cases} \quad , & n \neq m \\ \quad , & n = m \neq 0 \end{cases}$ What happens if $n = m = 0$?

3. <u>Book Problems:</u> Section 0.1, p. 12 #1, 4, 11, 12, 13, 22(b), Project 0.1.