1. Let $V = Sp(1, \cos t, \cos 2t, \cos 3t, \cos 4t)$ be the linear span of these five linear independent continuous functions over $\mathbb{R}$.
   a) Show that $\{1, \cos t, \cos^2 t, \cos^3 t, \cos^4 t\}$ is a basis for $V$.
   b) What is dim $V$?

2...6 Solve, write up solutions and hand in for grading the problems 2.6.1, 2.6.2, 2.6.5, 2.6.7, 2.6.16 found in the first two pages of the hand-out.

Solve more problems from the hand-out (but do not hand in the solutions for grading), they are nice, interesting, and will help you master the concepts.