HW5

In problems 1-3, use Gaussian elimination (row reduction algorithm).

1. What is the dimension of W if $W = \text{span}\{(1,1,0,0),(0,1,2,3),(1,2,2,3)\}$?
2. Extend $\{x, x^2-1, x^3+x^2+x+1\}$ to a basis in $P_3(\mathbb{R})$, the space of polynomials of degree at most 3.
3. Find the basis in $\text{span}\{(\mathrm{i},2,1+\mathrm{i},3),(\mathrm{i},0,0,1),(2\mathrm{i},2,1+\mathrm{i},4)\}$.
4. pp. 54-59 in the textbook: problems 30, 31(a), 32.
5. pp. 74-79 in the textbook: problems 5, 17, 26.
6. pp. 84-87 in the textbook: problem 4.

Remark. Each problems is worth 1 point, the problems with the star are worth 2 points. You can use any statement proved in class without reproving it.