1.) Sakurai, problem 1.1
2.) Sakurai, problem 1.2
3.) Sakurai, problem 1.3

4.) (a) If $A$ and $B$ are Hermitian operators, which of the following four operators is Hermitian? (Make sure to explain your reasoning.)

1) $A^2$
2) $[A, B]$
3) $\{A, B\}$
4) $i[A, B]$
5) $A^2B^2$

(b) If $C$ is not Hermitian, is the product $C^\dagger C$ Hermitian?

5.) A Hermitian operator has the property $X^\dagger = X$, whereas an anti-Hermitian operator obeys $X^\dagger = -X$.

Show that any operator $Y$ may be expressed as the sum of a Hermitian operator and an anti-Hermitian operator.