1. Recall the concept of conditional expectation and its most important properties.

2. Show that if $H$ is a bounded trading strategy and $X$ is a martingale, then the process $(H \cdot X)_t^T$ is a martingale as well.

3. Show that $X$ is a martingale iff $E(H \cdot X)_T = 0$ for all bounded trading strategies $H$.

4. Show that if $X$ is a martingale, then $X$ satisfies NA. More generally, if there exists an equivalent martingale measure for $X$, then $X$ satisfies NA.

5. Construct a model which admits an arbitrage opportunity and a model which satisfies NA.