Exercises 14: 5, 6, 7, 13, 14, 25, 31, 34

Exercises 15: 3, 4, 7, 9

Additional exercises:

1. Recall that $SL_n(\mathbb{R}) = \{A \in GL_n(\mathbb{R}) \mid \det(A) = 1\}$. Prove that $SL_n(\mathbb{R})$ is a subgroup of $GL_n(\mathbb{R})$. Then prove that it is a normal subgroup in two different ways:

   (a) first, using the fact that H is a normal subgroup of G if and only if $N_G(H) = G$.

   (b) second, by finding a map from $GL_n(\mathbb{R})$ to a group such that $SL_n(\mathbb{R})$ is the kernel of the map. (Hint: Use the definition of $SL_n(\mathbb{R})$ to help you find this map.)