1. Axler 3.24, 3.25

2. Axler 4.4

3. Consider \( L = \mathcal{L}(\mathbb{Z}_2^3, \mathbb{Z}_2^3) \), the set of all linear maps of the form \((a, b, c) \mapsto (d, e)\) where all \(a, b, c, d, e\) and all scalars are in \(\mathbb{Z}_2\).

   (a) Determine the cardinality of \(L\).
   
   (b) Determine the dimension of \(L\) and give a basis for \(L\).
   
   (c) Determine the number of elements in \(L\) that are injective.
   
   (d) Determine the number of elements in \(L\) that are surjective.

   Justify your answers.

Due: Monday September 14