Math 55a Review Problems

This is a fairly arbitrary selection of problems from the textbook that may be good for checking your understanding of the concepts. Some of these problems (especially those in Axler, and in the early chapters of Artin) are **easier and shorter than Math 55 exam problems** – they're just quick checks of your understanding, rather than testing your ability to think in depth. The problems marked with a * here (and generally those in the later chapters of Artin) are are probably closer to exam level in terms of the amount of thinking required. I also recommend going over the homework assignments (not worrying about the homework problems marked with a *, since exam problems are hopefully easier than those) – a number of very good review problems from the textbook are not listed here because they were already assigned on the homework.

Disclaimer: I have not thought very carefully about the complete solution and exact difficulty level of each of these problems. Some problems may be miscategorized – if something seems off, it's probably my fault.

Axler chapter 2: 2A.10; 2B.7; 2C.9, 2C.17

Axler chapter 3: 3B.3, 3B.5, 3B.20, 3B.22, 3B.24; 3C.6; 3D.3, 3D.7, 3D.19; 3E.1, 3E.13, 3E.20; 3F.6, 3F.22, 3F.23, 3F.25, 3F.30, 3F.36

Axler chapter 5: 5A.2, 5A.9, 5A.16, 5A.23*, 5A.24, 5B.4, 5B.11, 5B.12; 5C.3

Axler chapter 6: 6A.24; 6B.11, 6B.14*, 6B.16*; 6C.6, 6C.8*, 6C.10

Axler chapter 7: 7A.3, 7A.4, 7A.12, 7A.17; 7B.2, 7B.3, 7B.5, 7B.9, 7B.12*; 7C.9, 7C.13 (replace "normal" by "self-adjoint", since we didn't study normal operators)

Axler chapters 8-10: 8A.3, 8A.5, 8A.20; 8B.10; 8C.1, 8C.11*; 9A.16, 9A.18; 9B.1; 10A.9, 10A.18

Artin chapter 2: 4.5, 4.7, 4.9, 4.10; 5.1, 5.2; 6.3, 6.6, 6.10; 8.3*, 8.5, 8.7*, 8.8*, 8.10; 10.2; 11.4, 11.7*; 12.1, 12.2, 12.3*; M.2*, M.9*, M.10*

Artin chapter 3: 1.9; 3.1; 4.5; 5.3.

Artin chapter 4: 4.2, 4.6; 6.4, 6.8; 7.3, 7.6, 7.7; M.2*, M.7*, M.10*

Artin chapter 5: 2.3*, M.3, M.7*

Artin chapter 6: 4.2*, 4.3; 7.1, 7.6, 7.10, 7.11*; 8.4; 9.2, 9.4; 10.2, 10.3*; 11.1, 11.3, 11.5, 11.7*; M.3, M.4*

Artin chapter 7: 1.2; 2.2, 2.3*, 2.7, 2.13*, 2.17*; 3.2, 3.3; 4.2, 4.9*; 5.2, 5.3, 5.7, 5.12; 6.1, 6.4*; 7.3*, 7.9*; 8.3*, 8.4*, 8.5*; 10.2, 10.3; M.1*, M.3*, M.6, M.7.

Artin chapter 8: 2.2; 4.2, 4.3, 4.8, 4.10, 4.12; 5.2, 5.3, 5.4*; 6.2, 6.8*, 6.19; M.4*, M.14*

Artin chapter 10: 2.2*; 3.2*; 4.1*, 4.3*, 4.8, 4.9*; 5.1*, 5.2, 5.3, 5.4; 6.2, 6.10*, 6.11**; 7.1, 7.5; M.2*, M.13, M.14*

Artin chapter 14: 7.2, 7.5, 7.9*

Fulton-Harris chapters 1-2: 1.11, 1.12*, 1.14*; 2.2, 2.7, 2.27, 2.29*, 2.33*.