

These solutions aren't comprehensive, so please ask if you have questions or spot a typo.

1. (a) This is a sphere.
(b) The interior is $A^i = (0, 1) \times (0, 1)$. The boundary is the unit square, and the exterior is the rest of the plane; a common mistake was to say that the exterior included the dotted lines along the side of the square, but those are part of the boundary.
(c) Any topology needs to include the whole space, $\{a, b, c\}$ in this case. It also needs to contain arbitrary unions of sets in the topology, so we must add $\{a, c\}$. Lastly, it needs to include finite intersections of sets in the topology, but we're ok there.
2. This was problem 7 on the study guide, and a solution is online.
3. These problems were 5 and 8(a) on the study guide, respectively, and solutions are online.
4. This was number 2 on the study guide; answers are in the HW 5 solutions online (3.2 #7) together with example 3.15 in the book.