1. **Homework (due Thursday, February 11)**
   Page 366: 4, 8, 9, 10, 11, 12, 15.

2. **Homework (due Thursday, February 25)**
   Page 384: 3, 4, 5, 10, 11, 12(a, b, c), 14, 15.

3. **Homework (due Thursday, March 3)**
   Page 409: 20, 21, 23, 28 (For the first part of the problem, try to take advantage of the fact that the setting is that of “metric spaces” !!!! (so for instance, if two sets are disjoint and compact then the “distance between them” is strictly positive...). For the last part of the problem, one should in fact look for a counterexample! More precisely, show that one can find compact and arcwise connected sets as there, having the property that their intersection is NOT arcwise connected.)
   In addition, solve also the following problem: Consider the set $S$ of all the points in the plane of coordinates $(x, \sin(1/x))$ for $x \in (0, 1]$. Then, take the closure of it $\overline{S}$ and show that this closed set, viewed as a metric space with the topology induced from $\mathbb{R}^2$, is connected but not arcwise connected.

4. **Homework (due Thursday, March 10)**
   Page 435: 3, 4, 6, 7, 8, 10, 15, 16.

5. **Homework (due Thursday, March 17)**
   Page 452: 4, 9, 10, 15, 17, 18.

6. **Homework (due Thursday, April 21)**

7. **Homework (due Thursday, April 28)**
   Page 580: 7(a). Page 600: 5, 9, 10, 12.

8. **Homework (due Thursday, May 5)**
   Page 609: 1, 2, 3, 4(a).

9. **Homework (due Tuesday, May 10)**