1. From the textbook: p.66 – 11a, p.67 – 17d, p. 73 – 51 abc, p. 76 – 69 ab, p. 118 – 63 (do all questions for the first three graphs). These are odd problems and the answers are in the back. For this reason, I will not grade these problems, but they are still part of what you’re expected to do.

2. From the textbook: p. 66 – 12a, p. 68 – 24 (that is, the two digit numbers can be “01”, “02” ..., “99”), p.69 – 36, p. 76 – 68ab, p. 118 – 64 (do all questions for the first three graphs).

3. Using Kruskal’s Algorithm, find the maximum-cost spanning tree in the graphs in 51a, 51b and 51c.

4. Let $G$ be a complete graph on four vertices, written with one vertex in the center inside the triangle formed by the other three.
   a. Find two different spanning trees for $G$ that share no edges. (There are several ways to do this; think paths, not stars.)
   b. Put a weighting onto the edges of $G$ so that the minimum weight spanning tree has cost 3 and the maximum weight spanning tree has cost 30.

5. This problem uses your number $N$. Your portable music player has $N$ different songs.
   a. How many ways can you play five songs if there is no restriction on repetition?
   b. How many ways can you play five songs if no song can be repeated?
   c. How many ways can you play five songs if no two consecutive songs can be the same?
   d. (Extra Credit) Suppose one of your $N$ songs is “Positively 4th Street” by Bob Dylan. How many ways can you play five songs, if you have to play “Positively 4th Street” at least once. (Hint: first count the number of ways to play five songs if you don’t play “Positively 4th Street” at all.)