

Math 142, problem set 12
Due: Mon Dec 09
Revised Tue Dec 03

Problems to be done, but not turned in: (8.1) 1, 5, 7, 11, 15, 17, 21, 23, 25; (8.2) 1, 5, 7, 9, 13, 17, 21, 25.

Problems to be turned in:

1. (8.1) 6.
2. (8.1) 12(b).
3. (8.1) 18. (For simplicity, assume that leading 0's are allowed in an n -digit number.)
4. (8.1) 24.
5. (8.2) 4.
6. (8.2) 8.
7. (8.2) 18. (For simplicity, assume that $n = 2m$ is even.)
8. Let $s(n, k)$ be the number of ways to put n distinct objects in k distinct boxes, with each box nonempty. Use inclusion-exclusion to find a formula for $s(n, k)$.

Remark (not relevant to solving the problem): Note that $s(n, k)/k!$ is the number of ways to put n distinct objects into k identical boxes, with no box empty. In other words, $s(n, k)/k!$ is the number of ways to partition n objects into k nonempty sets. The numbers $s(n, k)/k!$ are called *Stirling numbers of the second kind*.