Homework 10 - Math 574, Frank Thorne (thornef@mailbox.sc.edu)
Due Monday, April 16 at 5:00.

Core:

9.3: 3, 18, 19, 22, 32, 33.

9.4: 1, 7, 10, 13, 17, 25, 26, 30, 31.

Additional:

9.3: 16, 23, 31.

9.4: 8, 9, 11, 18.

Bonus: (2 points) 9.3: 21, 37; 9.4, 32, 35

(10 points:) Suppose you want to travel n blocks north and n blocks east on a square city grid, travelling north or east at every step. With no restrictions, we showed that there are $\binom{2n}{n}$ ways to do this.

Suppose now we draw the diagonal between the starting spot and the final destination, and specify that we are never allowed to go below the diagonal. With this restriction, there are now only $\frac{1}{2n+1}\binom{2n}{n}$ possibilities.

Prove this.