Øving 6

Session 6.3

13) $2(n!)^2$

For each place 2K, there are n-2k women to choose from. for each 2k-1 there are n-(2k-1) men to choose from. This gives a total of $(n!)^2$ possibilities. Since we can order women and men on both (even, ~~or~~ odd) and (odd, even), we have a total $2(n!)^2$ permutations.

34) ~~$C(15,4)\cdot C(26,2)$~~

$$C(15,4)\cdot C(21,2) = \frac{15\cdot14\cdot13\cdot\cancel{12}}{\cancel{12}\cdot 2}\cdot 21\cdot 10 = \underline{\underline{286\ 650}}$$

First we pick 4 women to ensure the criteria is met. Then we pick the remaining two members from the pool.

Session 6.4

4) $\dfrac{13!}{8!\,5!} = \underline{1287}$

9) $(2x+(-3y))^{200} = \sum_{0}^{200}\binom{200}{j}2x^{25-j}\cdot(-3y)^j$

$$\Rightarrow \binom{200}{99}\cdot 2^{101}\cdot(-3)^{99}$$

$$= \underline{\underline{-\frac{200!}{101!\,99!}\cdot 2^{101}\cdot 3^{99}}}$$

12) $\binom{11}{k}$, $k = 0, 1, \ldots, 11$

Seksjon 6.5

6) $3^5 = \underline{\underline{243}}$

14) $x_1 + x_2 + x_3 + x_4 = 17$

$$\binom{17+2}{4-1} = \binom{19}{3} = \frac{19!}{3!\,16!} = \frac{19 \cdot 18 \cdot 17}{6}$$

$$= \underline{\underline{969}}$$

30) $n = 11$
$n_M = 1$
$n_i = 4$
$n_s = 4$
$n_p = 2$

$$P = \frac{11!}{1!\,4!\,4!\,2!} = \frac{11!}{24 \cdot 24 \cdot 2} = \underline{\underline{34\ 650}}$$

54)

5	0	0
4	1	0
3	1	1
3	2	0
2	2	1

$\underline{\underline{5}}$

$\boxed{\text{Section } 6.6}$

5a) $\underline{\underline{2134}}$

5c) $\underline{\underline{12534}}$