

Chapter 6 - Discrete Mathematics and Its Applications

Løsningsforslag på utvalgte oppgaver

Avsnitt 6.4

Oppgave 1

$$\begin{aligned} \text{a) } (x+y)^4 &= (x+y)^2(x+y)^2 = (x^2 + 2xy + y^2)(x^2 + 2xy + y^2) = \\ &= x^4 + 2x^3y + x^2y^2 + 2x^3y + 4x^2y^2 + 2xy^3 + x^2y^2 + 2xy^3 + y^4 = \\ &= x^4 + 4x^3y + 6x^2y^2 + 4xy^3 + y^4 \end{aligned}$$

$$\text{b) } (x+y)^4 = \sum_{j=0}^4 \binom{4}{j} x^{n-j} y^j = x^4 + 4x^3y + 6x^2y^2 + 4xy^3 + y^4$$

Oppgave 2

$$\binom{13}{13-5} = \binom{13}{8} = \binom{13}{5} = \frac{13 \cdot 12 \cdot 11 \cdot 10 \cdot 9}{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} = 1287$$

Oppgave 7

$$1 \ 9 \ 36 \ 84 \ 126 \ 126 \ 84 \ 36 \ 9 \ 1$$

Oppgave 8

$$1 \ 11 \ 55 \ 165 \ 330 \ 462 \ 462 \ 330 \ 165 \ 55 \ 11 \ 1$$