ECUACIONES COMBINATORIAS

$6 \cdot V_x^3 = V_x^5$

$6 \cdot \cancel{x \cdot (x-1) \cdot (x-2)} = \cancel{x \cdot (x-1) \cdot (x-2)} \cdot (x-3) \cdot (x-4)$

$x^2 - 7x + 6 = 0 \qquad x = 6 \qquad \cancel{x = 1}$

$V_x^4 = 20 \cdot V_x^2$

$\cancel{x \cdot (x-1)} \cdot (x-2) \cdot (x-3) = 20 \cdot \cancel{x \cdot (x-1)}$

$x^2 - 5x - 14 = 0 \qquad x = 7 \qquad \cancel{x = -2}$

$2 \cdot V_{x-1}^2 - 4 = V_{x+1}^2$

$2 \cdot (x-1) \cdot (x-2) - 4 = (x+1) \cdot x$

$x^2 - 7x = 0 \qquad x = 7 \qquad \cancel{x = 0}$

$VR_x^2 - V_x^2 = 17$

$x^2 - x \cdot (x-1) = 17$

$x^2 - x^2 + x = 17 \qquad x = 17$

$P_x = 132 \cdot P_{x-2}$

$x! = 132 \cdot (x-2)!$

$x \cdot (x-1) \cdot \cancel{(x-2)!} = 132 \cdot \cancel{(x-2)!}$

$x^2 - x - 132 = 0 \qquad x = 12 \qquad \cancel{x = -11}$

$12P_x + 5P_{x+1} = P_{x+2}$

$12 \cdot \cancel{x!} + 5 \cdot (x+1) \cdot \cancel{x!} = (x+2) \cdot (x+1) \cdot \cancel{x!}$

$12 + 5x + 5 = x^2 + 3x + 2$

$x^2 - 2x - 15 = 0 \qquad x = 5 \qquad \cancel{x = -3}$

$P_x = 2 \cdot V_5^3$

$x! = 2 \cdot 5 \cdot 4 \cdot 3 = 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 5!, \quad x! = 5! \qquad x = 5$

$V_m^x = 120 \cdot C_m^x$

$$\frac{m!}{(m-x)!} = 120 \cdot \frac{m!}{x! \cdot (m-x)!}$$

$1 = \dfrac{120}{x!}$ $\quad x! = 120 \quad x! = 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$

$x! = 5!$ $\quad x = 5$

$C_x^6 = 7C_x^4$

$$\frac{x \cdot \cancel{(x-1) \cdot (x-2) \cdot (x-3)} \cdot (x-4) \cdot (x-5)}{6 \cdot 5 \cdot \cancel{4!}} = \frac{7x \cdot \cancel{(x-1) \cdot (x-2) \cdot (x-3)}}{\cancel{4!}}$$

$x^2 - 5x - 4x + 20 = 210$

$x^2 - 9x - 190 = 0$ $\quad x = 19 \quad \cancel{x = -10}$

$4C_{19}^x = 19C_{17}^x$

$$\frac{4 \cdot 19!}{x! \cdot (19-x)!} = \frac{19 \cdot 17!}{x! \cdot (17-x)!}$$

$$\frac{4 \cdot 19 \cdot 18 \cdot 17!}{(19-x) \cdot (18-x) \cdot (17-x)!} = \frac{19 \cdot 17!}{(17-x)!}$$

$$\frac{4 \cdot 18}{(19-x) \cdot (18-x)} = 1$$

$72 = 342 - 19x - 18x + x^2$

$x^2 - 37x + 270 = 0$ $\quad x = 10 \quad \cancel{x = 27}$

27 no es solución porque el número de orden en las combinaciones es menor que el número de elementos.