Departamento de Matemáticas $1^{\underline{0}}$ Bachillerato



Números combinatorios. Binomio de Newton

1. p9e2 - Simplifica los cocientes entre factoriales:

(a) $\frac{7!}{6!}$

Sol: 7

(b) $\frac{8}{9}$

Sol: $\frac{1}{9}$

 $(c) \quad \frac{9!}{5! \cdot 4!}$

Sol: 126

 $(d) \quad \frac{m!}{(m-1)!}$

Sol: m

(e) $\frac{(m+1)!}{(m-1)!}$

Sol: m(m+1)

2. p9e3 - Calcula las siguientes operaciones:

(a) $\binom{252}{250}$

Sol: 31626

(b) $\binom{25}{3} + \binom{25}{4}$

Sol: 14950

(c) $\binom{9}{6} + \binom{9}{7} + \binom{10}{2}$

Sol: 165

(d) $\binom{4}{2} + \binom{4}{3} + \binom{5}{4} + \binom{6}{5} +$

 $\binom{7}{6} + \binom{8}{7}$

Sol: 36

(e) $\binom{4}{0} + \binom{4}{1} + \binom{4}{2} + \binom{4}{3}$

Sol: 15

3. p9e5 - Simplifica:

(a) $\frac{6!}{5!} + \frac{8!}{6!}$

Sol: 62

(b) $\frac{n!}{(n-1)!} + \frac{(n+2)!}{n!}$

Sol: $n^2 + 4n + 2$

$$\binom{n+3}{n} + \binom{n+2}{n}$$

Sol: $\frac{n(n+1)(n+2)(n+6)}{6(n^2+6)}$