Sabrina Medeiros de Lima - CT II 317

Coeficientes Binomiais - Triângulo de Pascal/Tartaglia

1- $\binom{8}{3} = \frac{8!}{3!\,5!} \to \frac{8.7.6.5!}{3!\,5!} = \frac{336}{6} \to 56$ R.B

2- $\binom{200}{198} = \frac{200.199.198!}{198!\,2!} = \frac{39.800}{2} = 19.900$ R.A

3- $\binom{n}{4-1} + \binom{n}{4} = \binom{n+1}{4}$

$\binom{n}{3} + \binom{n}{4} = \binom{n+1}{4}$

$4 = n+1$

$4-1 = n$

$\boxed{3 = n}$

$n+1 = n+n$

$n+1 = 2n$

$1 = 2n-n$

$\boxed{1 = n}$

$\binom{n}{2} + \binom{n-1}{2} = \binom{n-1}{2-1}$

$\binom{n}{2} + \binom{n-1}{2} = \binom{n-1}{1}$

$(n-1)+(n-1) = n$

$2n-2 = n$

$2n-n = 2$

$\boxed{n = 2}$

R. 1, 2, 3

4- $\binom{20}{13} + \binom{20}{14} = \binom{21}{7}$ R. $\binom{21}{7}$

5- $\binom{n}{0} + \binom{n}{1} + \binom{n}{2} + \dots + \binom{n}{n} = n^2$ R. n^2

6- a) $\sum_{p=0}^{10} \binom{10}{p} = \binom{10}{0} + \binom{10}{1} + \binom{10}{2} \cdots \binom{10}{10} = 2^{10} \to 1024$

b) $\sum_{p=0}^{9} \binom{10}{p} = \binom{10}{0} + \binom{10}{1} + \binom{10}{2} \cdots \binom{10}{9} = 2^{10} - 1 \to 1023$

c) $\sum_{p=2}^{9} \binom{9}{p} = \binom{9}{2} + \binom{9}{3} + \binom{9}{4} \cdots \binom{9}{9} = 510$

d) $\sum_{p=4}^{10} \binom{p}{4} = \binom{4}{4} + \binom{5}{4} \cdots \binom{10}{4} \to \binom{11}{5}$

$\frac{11!}{6!\,5!} = \frac{11.10.9.8.7.6!}{6!\,5!} = \frac{55.440}{120} = 462$

e) $\sum_{p=5}^{10} \binom{p}{5} = \binom{5}{5} + \binom{6}{5} \dots \binom{10}{5} \rightarrow \binom{11}{5}$

$\frac{11!}{6!\,5!} = \frac{11.10.9.7.\cancel{6!}}{\cancel{6!}\;5!} = \frac{55440}{120} = 462$ R 462

7- $\sum_{K=0}^{m} \binom{m}{K} = 512$ $\binom{m}{0} + \binom{m}{1} \dots \binom{m}{m} \rightarrow 2^m = 512$

$512 = 2^9$

$m = 9$

512	2
256	2
128	2
64	2
32	2
16	2
8	2
4	2
2	2
1	

R. E