Nome: Gustavo da Silva de Souza CTII 348.

Aula 02 - 2º Bimestre

Tarefa Básica

01. O Número Binomial $\binom{8}{3}$ é:

$$\binom{8}{3} = \frac{8!}{3!\,5!} = \frac{8.7.6.\cancel{5!}}{3!\,\cancel{5!}} = \frac{8.7.6}{3.2.1} = \frac{336}{6} = \boxed{56}$$

R: Letra (B) 56.

02. O Valor do Número Binomial

$$\binom{200}{198} \text{ é: } \frac{200!}{198!\,2!} = \frac{200.199.\cancel{198!}}{\cancel{198!}\,2.1} = \frac{39800}{2} = \boxed{19900}$$

R: Letra (A) 19900.

03. (MAUÁ) - Resolver a equação $\binom{n-1}{2} = \binom{n+1}{4}$

1º Iguais

$n = n$

$d = d$ X

2º Complementares

$n = n$

$d1 + d2 = n$ X

3º

$d = 0$

$n = d$ X

4º

$n1 \leq d1$

$n-1 \leq 2$

$\boxed{n \leq 3}$

$n2 < d2$

$n+1 \leq 4$

$\boxed{n \leq 3}$

$n-1 \geq 0$

$\boxed{n \geq 1}$

$n+1 \geq 0$

$\boxed{n \geq -1}$

$V = \{1, 2 \text{ e } 3\}$

04. (FATEC) - O Valor de $\binom{20}{13}+\binom{20}{14}$ é:

$$\binom{n}{K}\ \binom{n}{K+1}=\binom{n+1}{K+1}$$

$$\binom{21}{14}=\binom{21}{7}$$

Complementares

R: Letra (C) $\binom{21}{7}$

05. (ITA) - Quanto Vale $\binom{n}{0}+\binom{n}{1}+\binom{n}{2}+\dots+\binom{n}{n}$?

R: $\boxed{2^n}$

06. Calcular

a) $\sum_{P=0}^{10}\binom{10}{P}=\binom{10}{0}+\binom{10}{1}+\dots+\binom{10}{10}\Rightarrow 2^{10}=\boxed{1024}$

b) $\sum_{P=0}^{9}\binom{10}{P}=\binom{10}{0}+\binom{10}{1}+\dots+\binom{10}{9}\Rightarrow 2^{10}=1024-1$
$=\boxed{1023}$

c) $\sum_{P=2}^{9}\binom{9}{P}=\binom{9}{2}+\binom{9}{3}+\dots+\binom{9}{9}\Rightarrow 2^9=512-1-9=\boxed{502}$

d) $\sum_{P=4}^{10}\binom{P}{4}=\binom{4}{4}+\binom{5}{4}+\dots+\binom{10}{4}=\binom{11}{5}\ \frac{11!}{5!\,6!}=\frac{11.10.9.8.7.\cancel{6!}}{5.4.3.2.1\ \cancel{6!}}$

$=\frac{55440}{120}=\boxed{462}$

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

$\binom{11}{6} = \frac{11!}{6!\,5!} = \frac{11.10.9.8.7.\cancel{6!}}{\cancel{6!}\,5.4.3.2.1} = \frac{55440}{120} = \boxed{462}$ //

Complementar com a questão (D)

07. (FGV) - O Valor de m que satisfaz a sentença

$\sum_{K=0}^{m} \binom{m}{K} = 512$ é $\binom{m}{0} + \binom{m}{1} + \dots + \binom{m}{m}$

$\Downarrow$

$2^m = 512 = 2^9 = 512$

$\Downarrow$

9

R: Letra (E) 9. //