Tarefa Básica

1-) $\binom{8}{3} = \dfrac{8!}{3!(8-3)!} = \dfrac{8.7.6.\cancel{5!}}{3!\,\cancel{5!}} = \dfrac{56.\cancel{6}}{\cancel{6}} = 56$

B

2-) $\binom{200}{198} = \frac{200!}{198!\,2!} = \frac{200 \cdot 199 \cdot 198!}{198!\,2!} = \frac{39800}{2} = 19900$

A

3-) $\binom{m-1}{2} = \binom{m+1}{4}$ $\quad 2 + 4 = 6$

$m > 0$, pois não excite fatorial de número negativo.

$m - 1 \leq 2$ $\quad m + 1 \leq 4$

$m \leq 3$ $\quad m \leq 3$ $\quad m > 0$ e $m \leq 3$

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

4-) $\binom{20}{13} + \binom{20}{14}$ soma de dois consecutivos

$\binom{20}{13} + \binom{20}{14} = \binom{21}{14} = \binom{21}{7}$

C

5-) $\binom{m}{0} + \binom{m}{1} + \binom{m}{2} + \dots + \binom{m}{m} = 2^m$

soma na linha

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

b) $\sum_{p=0}^{9} \binom{10}{p} = 2^{10} - \binom{10}{10} = 1024 - 1 = 1023$

c) $\sum_{p=2}^{9} \binom{9}{p} = 2^9 - \binom{9}{0} - \binom{9}{1} = 512 - 1 - 9 = 502$

d) $\sum_{p=4}^{10} \binom{p}{4} = \binom{4}{4} + \binom{5}{4} + \binom{6}{4} + \binom{7}{4} + \binom{8}{4} + \binom{9}{4} + \binom{10}{4} =$

$\binom{11}{5} = \frac{11!}{5!\,(11-5)!} = \frac{11.10.9.8.7.\cancel{6!}}{5.4.3.2.1.\cancel{6!}} = \frac{55440}{120} = 462$

e) $\sum_{p=5}^{10} \binom{p}{5} = \binom{5}{5} + \binom{6}{5} + \binom{7}{5} + \binom{8}{5} + \binom{9}{5} + \binom{10}{5}$

$\binom{11}{6} = \frac{11!}{6!\,(11-6)!} = \frac{11!}{6!\,5!} = 462$

7-) $\sum_{k=0}^{m} \binom{m}{k} = \binom{m}{0} + \dots + \binom{m}{m} = 512 = 2^m = 2^9$

E $\quad m = 9$