



INSTITUTO FEDERAL

São Paulo

Câmpus Cubatão

DOCENTE: LUCIANO ANDRE CARVALHO REIS

DISCENTE: GABRIEL ALVES DE OLIVEIRA

SALA: 317

MATEMATICA

SEMANA 10

DOM LUN MAR MIE JUE VII SAB

$$\textcircled{1} \quad \binom{8}{3} = \frac{8!}{3!5!} = \frac{8 \cdot 7 \cdot 6 \cdot \cancel{5!}}{3 \cdot 2 \cdot 1 \cdot \cancel{5!}} = \frac{336}{6} = 56$$

R: (B)

$$\textcircled{2} \quad \binom{200}{198} = \frac{200!}{198!2!} = \frac{200 \cdot 199 \cdot \cancel{198!}}{\cancel{198!} \cdot 2 \cdot 1} = \frac{39800}{2} = 19900$$

R: (A)

$$\textcircled{3} \quad \binom{n-1}{2} = \binom{n+1}{4} \quad \begin{aligned} 4(n-1) &= 2(n+1) \\ 4n-4 &= 2n+2 \\ 2n &= 6 \\ n &= \frac{6}{2} = 3 \\ n &\leq 3 \rightarrow \{1, 2, 3\} \end{aligned}$$

$$\textcircled{4} \quad \binom{20}{13} + \binom{20}{14} \quad \begin{aligned} &2 \text{ consecutivos da linha } 20 \\ &\binom{21}{14} = \frac{21!}{14!7!} \end{aligned}$$

R: (C)

(6) (5) utilizando soma de linhas fica 2^n

$$\text{linha } 0 \rightarrow 1 = 2^0$$

$$\text{linha } 1 \rightarrow 2 = 2^1$$

$$\text{linha } 2 \rightarrow 4 = 2^2$$

$$\text{linha } 3 \rightarrow 8 = 2^3$$

$$\text{linha } 4 \rightarrow 16 = 2^4$$

$$\text{linha } n \rightarrow 2^n$$

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

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

$$c) \sum_{p=2}^9 \binom{9}{p} \left(\frac{9}{2} + \dots + \frac{9}{9} \right) = 2^9 - 1 - 9 = 512 - 1 - 9 = 502$$

$$d) \sum_{p=4}^{10} \binom{p}{4} \left(\frac{4}{4} + \dots + \frac{10}{5} \right) \frac{11!}{5! (11-5)!} = \frac{11!}{5! 6!} = 462$$

$$e) \sum_{p=5}^{10} \binom{p}{5} \left(\frac{5}{5} + \dots + \frac{10}{6} \right) \frac{11!}{6! (11-6)!} = \frac{11!}{6! 5!} = 462$$

$$(7) \sum_{K=0}^m \binom{m}{K} = 512 = 2^9 = \binom{9}{K}$$

$K: (E)$

