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Tarefa básica

1) $(1+2x^2)^6$

$\binom{6}{k} 1^{6-k} \cdot (2x^2)^k = x^8$

$\binom{6}{k} 2^k \cdot x^{2k}$

$2k=8$

$k=\frac{8}{2}$

$k=4$

$\binom{6}{4} 2^4 \cdot x^8$

$\frac{\cancel{6}.5.\cancel{4}.\cancel{3}.16}{\cancel{4}.\cancel{3}.\cancel{2}.1} . x^8$

$3.5.16=240$

$240x^8$ Letra C

2- $(14x-13y)^{237}=(14.1-13.1)^{237}=(14-13)^{237}=1^{237}$

$=1$

Letra B

3) $(x+a)^{11} = 1386x^5$

$\binom{11}{k} x^{11-k} a^k = 1386x^5$

$11 - k = 5$

$-k = 5 - 11$

$-k = -6 \quad (-1)$

$k = 6$

$\binom{11}{6} x^{11-6} \cdot a^6 = 1386x^5$

$\binom{11}{6} x^5 \cdot a^6 = 1386x^5$

$\frac{11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot \cancel{6}}{\cancel{6} \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} a^6 = 1386$

$462\, a^6 = 1386$

$a^6 = \frac{1386}{462}$

$a^6 = 3$

$a = \sqrt[6]{3}$ letra A

4) $\left(x+\frac{1}{x^2}\right)^9 = T_{9+1} = \binom{9}{k} . x^{9-k}$

$\left(\frac{1}{x^2}\right)^k = T_{9+1} = \binom{9}{k} . x^{9-k} . (x^{24})^k$

$= \binom{9}{k} . x^{\frac{9-k}{2}} . x^{-k} = \frac{9-k}{2} - k = \binom{9}{k}$

$x\ \frac{9-P}{2} - k \to \frac{9-k}{2} - \frac{2k}{2} = \frac{9-3k}{2}$

$T_{9+1} \binom{9}{k} . x^{\frac{9-3k}{2}} \to \frac{9-3k}{2} = 0$

$9-3k=0$ $\quad k = \binom{9}{3}$ letra D

$9 = 3k$

5- $\left(x+\frac{1}{x^2}\right)^m$

$\binom{m}{k} x^{m-k} . \left(\frac{1}{x^2}\right)^k$

$\binom{m}{k} x^{m-k} . \frac{1k}{x^{2k}}$

$\binom{m}{k} x^{m-3k} . 1k$

$m - 3k = 0$

$-3k = -m \quad (-1)$

$3k = m$

$k = \frac{m}{3}$

$\binom{m}{\frac{m}{3}} 1^{\frac{m}{3}}$

$\binom{m}{\frac{m}{3}} \frac{1}{3}$ letra C

7) $(2x+y)^5$

$(2x+y)^5 = \binom{5}{0}(2x)^5 y^0 + \binom{5}{1}(2x)^4 y^1 + \binom{5}{4}(2x)^1 y^4 \binom{5}{5}(2x)^0 y^5$

A soma dos coeficientes de $(2x+y)^5$ é:

$\binom{5}{0}2^5 + \binom{5}{1}2^4 + \binom{5}{2}2^3 + \binom{5}{3}2^2 + \binom{5}{4}2^1 + \binom{5}{5}2^0$

$= 2^5 + 5 . 2^4 + 10 . 2^2 + 5 . 2 + 1$

$= 32 + 80 + 40 + 10 + 1 = 243$ letra C