Tarefa Básica - Teorema do Binômio

01) $(1+2x^2)^6$

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

$2k = 8$

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

$\boxed{k = 4}$

$\binom{6}{4} 2^4 \; x^8 = \frac{6 \cdot 5 \cdot 4!}{4! \; 2!} \; 16x^8$

$\frac{30}{2} \cdot 16x^8 = \boxed{240x^8}$

R: C

02) $(14x - 13y)^{237}$

$x = 1 \quad (14 \cdot 1 - 13 \cdot 1)^{237}$

$y = 1 \quad (14 - 13)^{237}$

$\boxed{(1)^{237}}$

R: B

S T Q Q S S D __/__/__

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

$T_{k+1} = \binom{11}{k} x^{11-k} a^k = 1386x^5$

$11 - k = 5$

$\boxed{k = 6}$

$\underbrace{T_{6+1}}_{7} = \binom{11}{6} x^{11-6} a^6 = 1386x^5$

$T_7 = \binom{11}{6} x^5 a^6 = 1386x^5$

$T_7 = \frac{11!}{6!5!} a^6 = 1386$

$T_7 = \frac{11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6!}{6! \, 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} a^6 = 1386$

$T_7 = \frac{55440}{120} a^6 = 1386$

$462 a^6 = 1386$

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

$a^6 = 3$

$\boxed{a = \sqrt[6]{3}}$ R: A

04) $\left(x + \frac{1}{x^2}\right)^9$

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

$\binom{9}{k} x^{9-3k} \Rightarrow 9 - 3k = 0$

$-3k = -9 \quad \cdot(-1)$

$3k = 9$

$k = \frac{9}{3}$

$\boxed{k = 3}$ R: D

$T_4 = \binom{9}{3} x^{9-3} + \left(\frac{1}{x^2}\right)^{2 \cdot 3}$

$T_4 = \binom{9}{3}^6 + \left(\frac{1}{x^2}\right)^6$
4

05) $\left(x + \frac{1}{x^2}\right)^n$ Quando o termo for divisível por 3

$k = 3$ (q4)

R: C

07) $(2x+y)^5$

$x=1$ $(2\cdot 1+1\cdot 1)^5$

$y=1$ $(2+1)^5$

$(3)^5 = \boxed{243}$ R: C