1- $(1+2x^2)^6$, o coeficiente de x^8 é?

coeficiente do termo x^2

linha 6

$\binom{6}{k}^{6-k} (2x^2)^k = \binom{6}{k} 2^k . 2^k$, para k

C

$2k = 8$

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

$k = 4$

$\binom{6}{4} 1^2 . (2x^2)^4$

$\frac{6.5.4!}{2.1\,4!} = \frac{6.5}{2} = \frac{30}{2} = 15$

$15.1.16x^8 = 240x^8$

2- $(14x - 13y)^{237}$, soma dos coeficientes?

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

B

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

linha 11

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

$11-k=5$

$11-5=k$

$k=6$

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S T Q Q S S D

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

$\binom{11}{6} a^6 = 1386 \quad = \frac{11!}{6!5!} = \frac{11.10.9.8.7.6}{6!5.4.3.2.1} a^6 = 1386 \therefore$

$\therefore \frac{55440}{120} a^6 = 1386 \quad = 462\, a^6 = 1386 \therefore$

$\therefore a^6 = \frac{1386}{462} = 3 \therefore$ **A**

$\therefore a = \sqrt[6]{3}$

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

linha 9

$\binom{9}{K} x^{9-K} (-x^{-2})^K$

$9 - K - 2K = 0$
$9 - 3K = 0$
$9 = 3K$
$K = 9/3$
$K = 3$

o termo independente $\binom{9}{3}$ **D**

S T Q Q S S D

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

$\binom{n}{k} x^{n-k} \quad (-x^{-2})^k$ | C

$n-k-2k=0$

$n-3k=0$ quando n multiplica 3, se torna divisível por 3

$n=3k$

6- $k=\left(3x^3+\frac{2}{x^2}\right)+\left(243x^{15}+810x^{10}+1080x^5+\frac{240}{x^5}+\frac{32}{x^{10}}\right) \quad x=\mathbb{R}\ e\ x\neq 0$

$\left(3x^2+\frac{2}{x^2}\right)^5 \therefore \left(\binom{5}{0}\cdot(3x^3)^5\right)+\left(\binom{5}{1}\cdot(3x^3)^4+\left(\frac{2}{x^2}\right)\right)+\left(\binom{5}{2}\cdot(3x^3)^3\cdot\left(\frac{2}{x^2}\right)^2\right)+\therefore$

$\therefore\left(\left(\binom{5}{3}\cdot(3x^3)^2\cdot\left(\frac{2}{x^2}\right)^3\right)+\left(\binom{5}{4}\cdot(3x^3)\cdot\left(\frac{2}{x^2}\right)^4\right)+\left(\binom{5}{5}\cdot\left(\frac{2}{x^2}\right)^5\right)\right)=$

$\left(243x^{15}+810x^{10}+1080x^2+720+\left(\frac{240}{x^5}\right)+\left(\frac{32}{x^{10}}\right)\right)-\therefore$

$\therefore\left(243x^{15}+810x^{10}+1080x^2+\left(\frac{240}{x^5}\right)+\left(\frac{32}{x^{10}}\right)\right)=$ 720 | E

7- $(2x+y)^5$, soma dos coeficientes?

$(2+1)^5=3^5=3.3.3.3.3=$ 243 | C