Tarefa basica

1. $(1+2x^2)^6 \quad x^8$

$2K=8$
$K=4$

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

(c)

$\binom{6}{4} 2^4 \cdot x^8 = \frac{6!}{4!\,2!} \cdot 16 \cdot x^8 = 240x^8$ //

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

$x = 1$
$y = 1$

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

3. $T_{K+1} = \binom{11}{K} x^{11-K} \, a^K = 1386x^5$

$11 - K = 5$
$K = 6$

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

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

$T_1 = \binom{11}{6} x^5 \, a^6 = 1386x^5$

$T_1 = \frac{11!}{6!\,5!} \, a^6 = 1386$

$T_1 = \frac{11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6!}{6!\,5!} \, a^6 = 1386$

$T_1 = \frac{55440}{120} \, a^6 = 1386$

$462a^2 = 1386$

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

$a^6 = 3$

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

$T_{9+1} = \dbinom{9}{k} \cdot x^{9-k} \cdot \left(\dfrac{1}{x^2}\right)^k =$

$T_{9+1} = \dbinom{9}{k} x^{9-k} \; x^{2k} = \dbinom{9}{k} x^{9-2k}$

$9 - 2k = 0$

$-2k = 9$

$k = \dfrac{9}{2} = 3 \qquad \dbinom{9}{3}$ //

5. $\left(x + \dfrac{1}{x^2}\right)^n = T_{n+1} = \dbinom{n}{k} \cdot x^{n-k} \left(\dfrac{1}{x^2}\right)^k$

$T_{n+1} = \dbinom{n}{k} x^{n-k} \left(x^{2-1}\right)^k = \dbinom{n}{k} x^{\frac{n-k}{2}} \cdot x^k = \dbinom{n}{k} x^{\frac{n-k}{2} - k}$

$\dfrac{n-k}{2} - k = \dfrac{n-3k}{2} = 0 \quad \Big\} \quad T_{n+1} = \dbinom{n}{k} x^{\frac{n-3k}{2}}$

$n = 3k \qquad \dfrac{3}{3} = 1$ //

6. $\left(\dfrac{3.1^3 + 2}{1^2}\right)^5 = \left(234.1^{15} + 810.1^{10} + 1080^5 + \dfrac{240}{1^5} + \dfrac{32}{1^{10}}\right)$

$\left(\dfrac{3.1 + 2}{1}\right)^5 = 234 + 810 + 1080 + 240 + 32$

2405

$5^5 = 3125$

$3125 - 2405 = 720$ //

tilibra