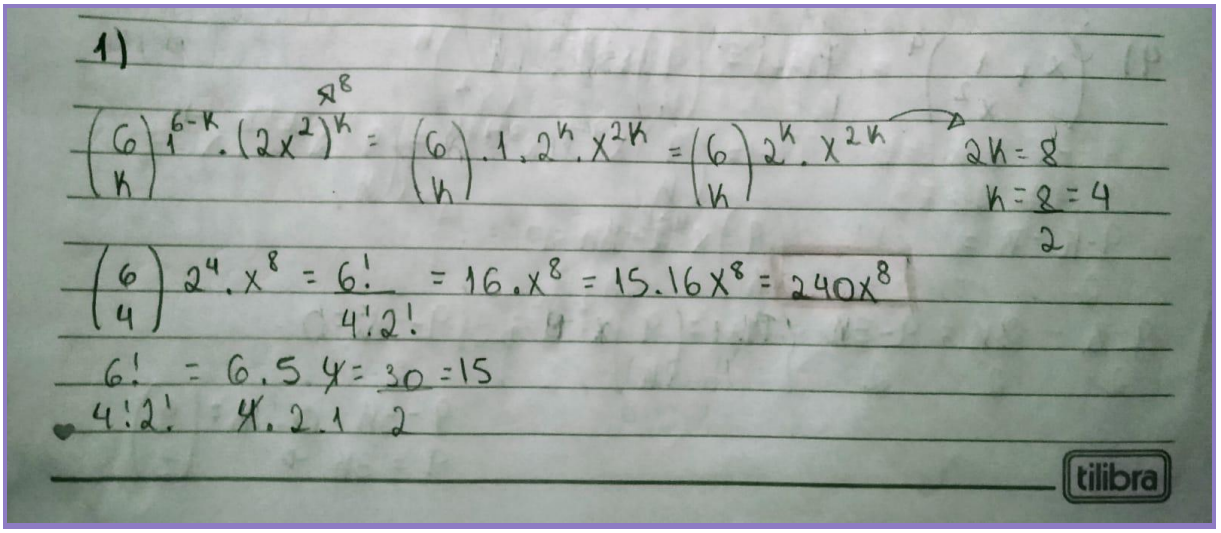
Nome: Gabriely Cristina Silva Santos CTII: 317

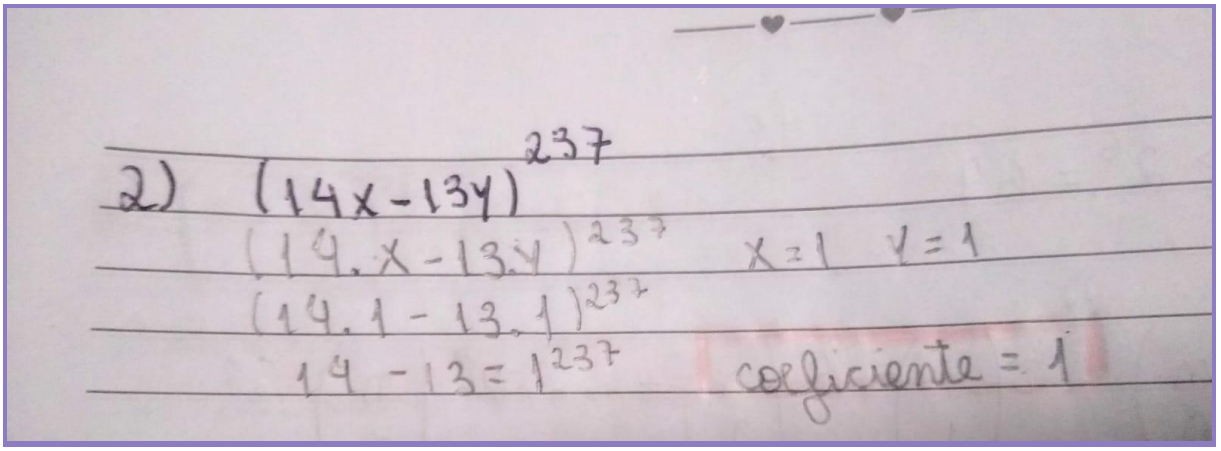
LISTA TEOREMA DO BINÔMIO

EXERCÍCIOS:

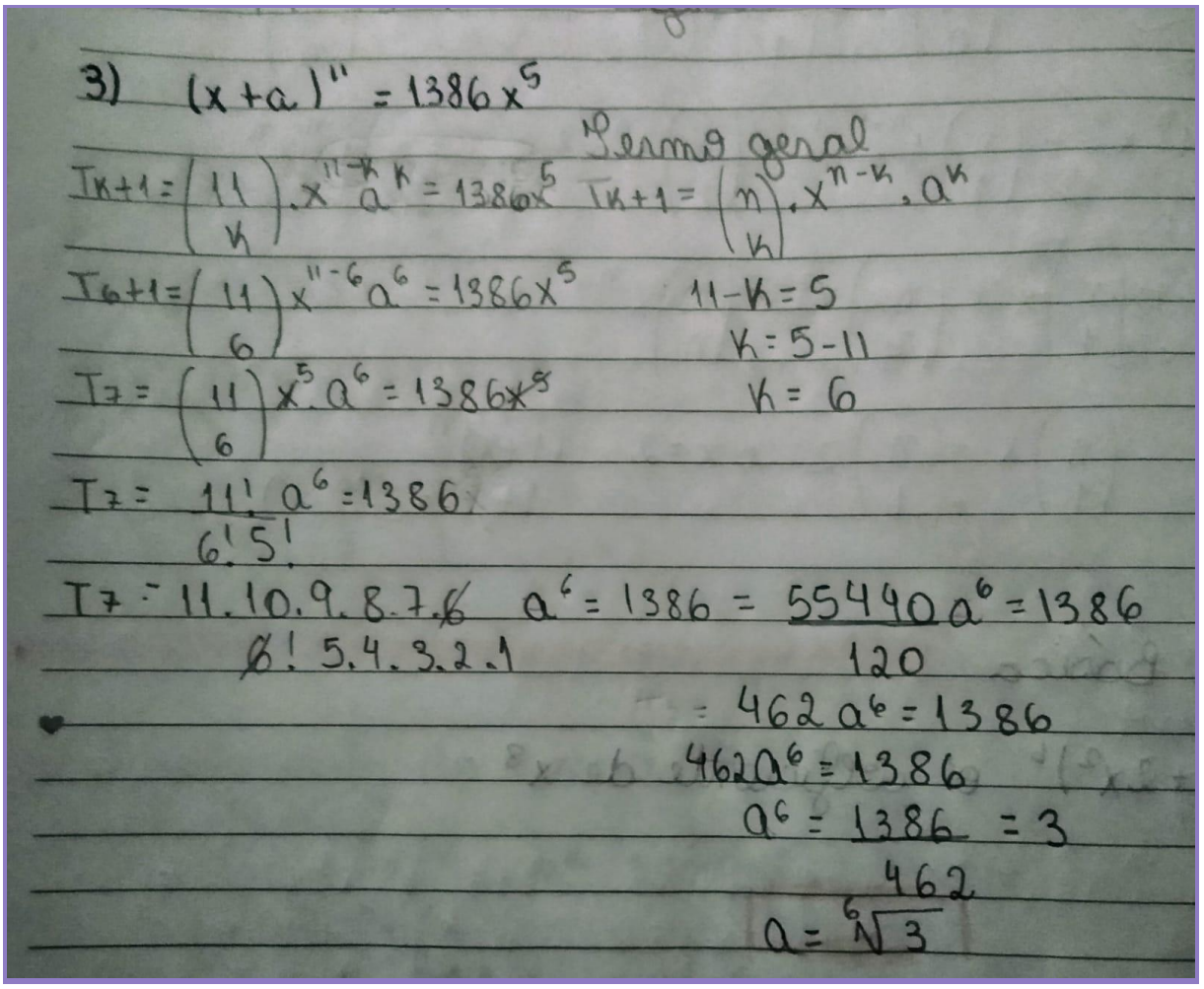
1)



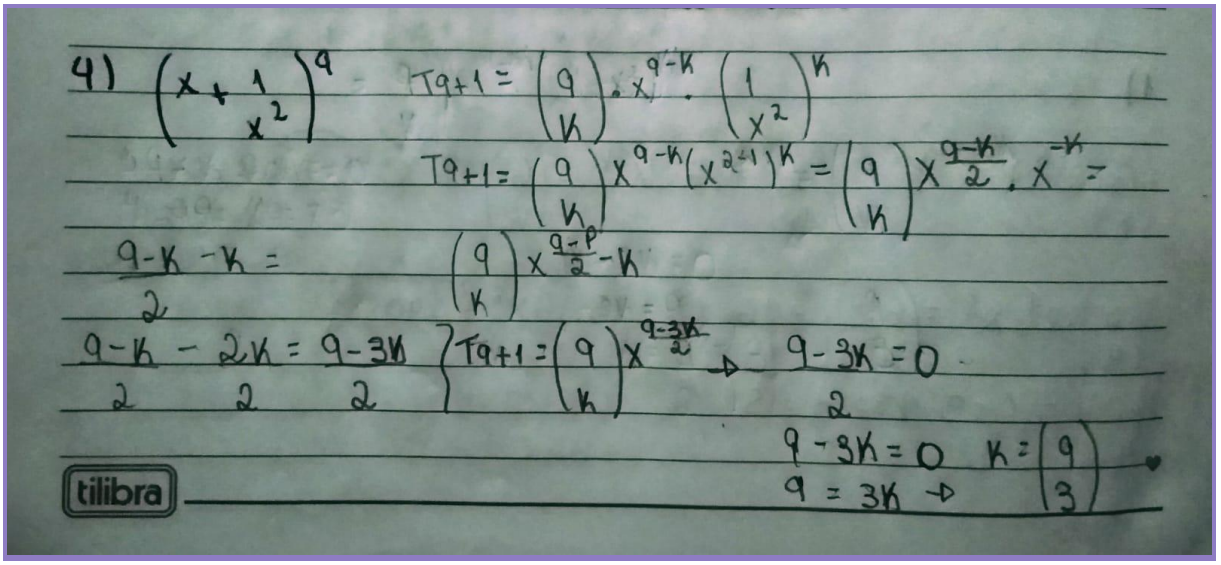
2)



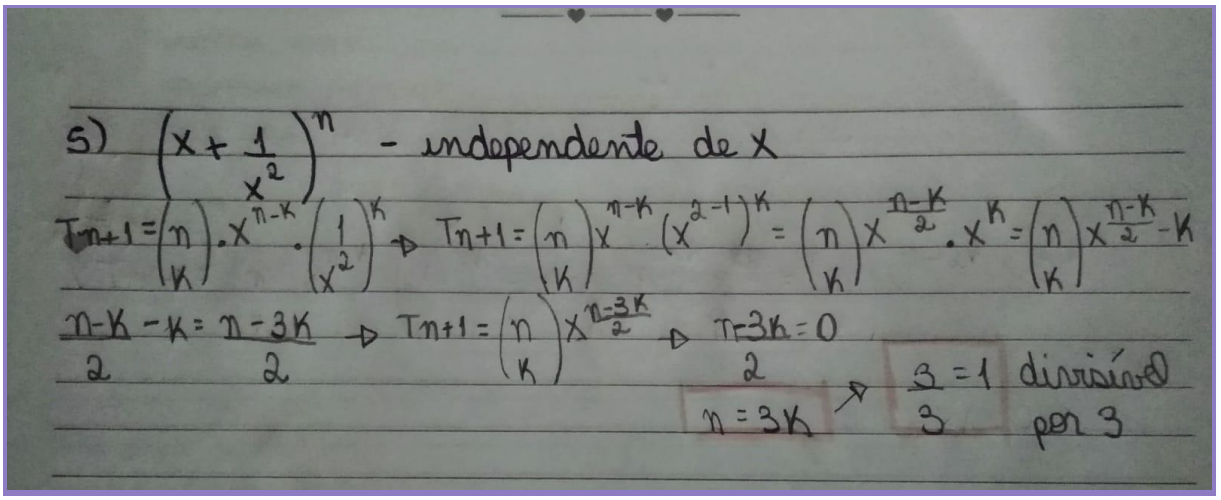
3)

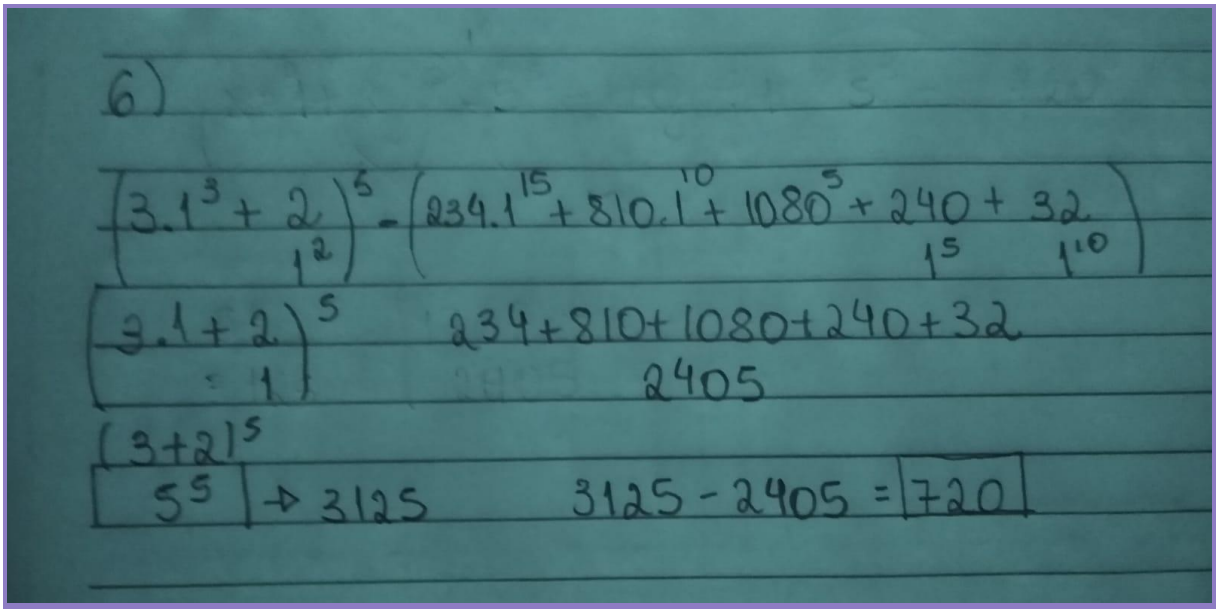

3) $(x+a)^{11} = 1386x^5$
1º termo geral
$T_{k+1} = \binom{11}{k} \cdot x^{11-k} a^k = 1386x^5$
$T_{k+1} = \binom{n}{k} \cdot x^{n-k} \cdot a^k$
$T_{6+1} = \binom{11}{6} x^{11-6} a^6 = 1386x^5$
$11-k=5$
$k=5-11$
$k=6$
$T_7 = \binom{11}{6} x^5 a^6 = 1386x^5$
$T_7 = \frac{11!}{6!5!} a^6 = 1386$
$T_7 = \frac{11.10.9.8.7.6}{6!\,5.4.3.2.1}\, a^6 = 1386 = \frac{55440}{120} a^6 = 1386$
$462\, a^6 = 1386$
$462a^6 = 1386$
$a^6 = \frac{1386}{462} = 3$
$a = \sqrt[6]{3}$

3)

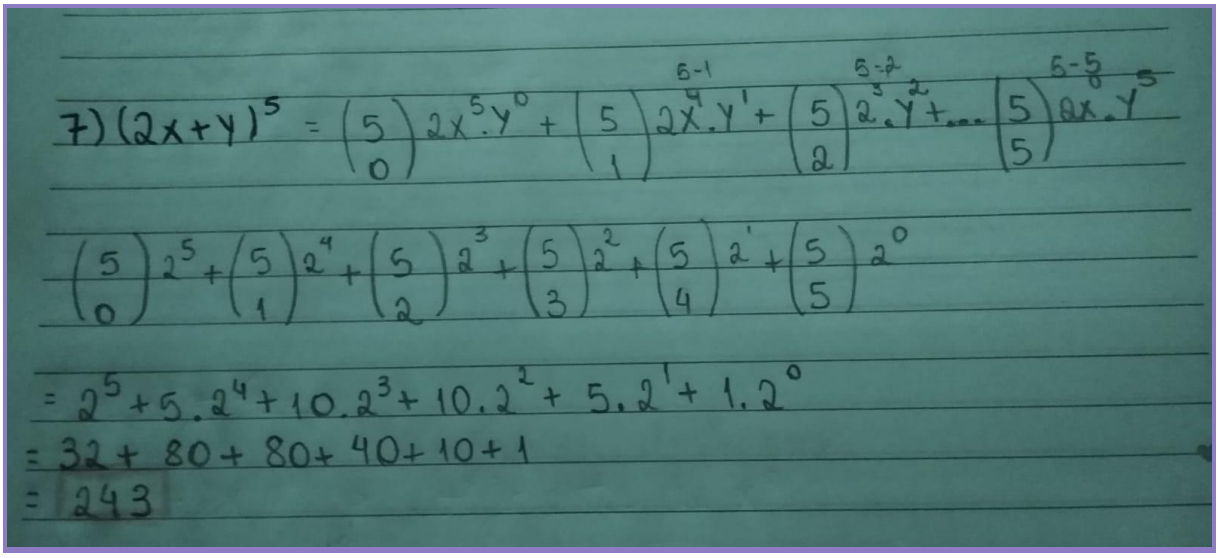

4) $\left(x + \frac{1}{x^2}\right)^9$
$T_{9+1} = \binom{9}{k} \cdot x^{9-k} \cdot \left(\frac{1}{x^2}\right)^k$
$T_{9+1} = \binom{9}{k} x^{9-k} (x^{2\cdot -1})^k = \binom{9}{k} x^{\frac{9-k}{2}} \cdot x^{-k} =$
$\frac{9-k}{2} - k =$
$\binom{9}{k} x^{\frac{9-p}{2} - k}$
$\frac{9-k}{2} - \frac{2k}{2} = \frac{9-3k}{2}$
$T_{9+1} = \binom{9}{k} x^{\frac{9-3k}{2}}$
$\frac{9-3k}{2} = 0$
$9-3k=0$
$9=3k$
$k = \binom{9}{3}$
tilibra

5)


5) $\left(x+\frac{1}{x^2}\right)^n$ - independente de x
$T_{n+1}=\binom{n}{k}\cdot x^{n-k}\cdot\left(\frac{1}{x^2}\right)^k \Rightarrow T_{n+1}=\binom{n}{k}x^{n-k}(x^{2\cdot(-1)})^k=\binom{n}{k}x^{\frac{n-k}{2}}\cdot x^k=\binom{n}{k}x^{\frac{n-k}{2}-k}$
$\frac{n-k}{2}-k=\frac{n-3k}{2} \Rightarrow T_{n+1}=\binom{n}{k}x^{\frac{n-3k}{2}} \Rightarrow \frac{n-3k}{2}=0$
$n=3k \nearrow \frac{3}{3}=1$ divisível por 3


6)
$\left(3.1^3+\frac{2}{1^2}\right)^5-\left(234.1^{15}+810.1^{10}+1080^5+240+\frac{32}{1^5}.1^{10}\right)$
$(3.1+2)^5$
$234+810+1080+240+32$
2405
$(3+2)^5$
$5^5 \Rightarrow 3125$
$3125-2405=720$

7)


7) $(2x+y)^5=\binom{5}{0}2x^5.y^0+\binom{5}{1}2x^{5-1}.y^1+\binom{5}{2}2^{5-2}.y^2+\ldots\binom{5}{5}^{5-5}$
$\binom{5}{0}2^5+\binom{5}{1}2^4+\binom{5}{2}2^3+\binom{5}{3}2^2+\binom{5}{4}2^1+\binom{5}{5}2^0$
$=2^5+5.2^4+10.2^3+10.2^2+5.2^1+1.2^0$
$=32+80+80+40+10+1$
$=243$