Listo Indusão 02 1. Prove que 1+2+3+1.1.+1= m(n+1) CB. P(1) vale Pois 1-7(1+1) HJ. Vamos supor P(K) Valido Para algum K>1 1+2+3+ ... + K = K(K+1) 1+2+3+ ... + K : K2+K P. I. Vamos Pro Var P(K+2) Valido 1+2+3+...+ K+ K+1 = 1K+2/K+1+1) K2+K 133K+2 1+2+3+ ... + K+K+1="(K+1)(5+2) 7+ 2+3+ ... + K+ K+7 = K2+3K+2 K+K+K+1= K2+3K+2 K2+K+2K+2 = K2+3K+2 K2+3K+2= K2+3K+2 Logo, Pelo P.I.F, a formula vole YneIN

2 0 0 0 3 3 3 1 1 1 1	
2. Prove que 13+ 23+ + 13= (1+2+ + 11)2	
	200
Lomo de monstramos anteriormente	
1+2+3++ h: n(n+1)	34
toto	100
14 40 14 100 100 100 100 100	dien
n and the state of	
TO MULANDO O EXELLIGIO K+ 4 K+ 4 K+ 1	40
The transfer of the transfer o	1
1+2++ n= (1)+11- 4x+4x	4+0
0 CB P(1) Vate Pois K +2K + V2	
42 = 11 (N+7) 44 (X3 20X3 27K + 4	10
Part Control of the C	
7=1(4)	11
7=1-1-1 P. D. P. S. + Tolker V. You be the second of the s	
7= 1.9	4.5
15 york for 145 pl + - + 14 May and the sale of the	
oHI Vons Sufor P(K) Vo lido Para algum K > 1	2
The state of the s	
THE THE RESIDENT TO THE PARTY OF THE PARTY O	No.
O.T. Wagnet By your place in the	
P.I. Vamos Provor PIK+D verlido, ou sosa	
1+2++ K+ (K+1)= (K+1)+(K+1+V)	310
K2/K+1)2+ (K+1)3= (K+1)2 (K+2)2	
William Committee and the state of the state	tel l
1 + (K+1) = (K+2K+1) (K+9K+1)	
K (K+2K+1) + 4(K3+3K3+1) = [K2+2K+1] [K2+4K+4]	
	-
K2(K2+2K+1)+A(K1+3K+1)=(K2+2K+1)(K2+4K+4)	_
K4+2K3+K2+4K3+12K4+12K+4=K4+6K3+13K2+12K+4	_
K4+6K3+13K2+12K+0-K4 178+12K+4	
$K^4 + 6K^3 + 13K^2 + 72K + 9 = K^4 + 6K^7 + 13K^7 + 72K + 9$	
THE PARTY OF THE P	

3. Prove que 1+4+7+ ... + (311-2)= n(3n-1) CB PM vale Pois 7=7(3.7-1) 1=7 H.J. Vamos Sufar P(KI Válido Para algum K >7 1+4+7+ ... + (3K-2) = K(3K-1) 7+4+7+ ... + (3K-2) = 3K - K P. I. Vamos Prover P(K+2) Volids, on Seja 1+4+7+ ... + (3K-2)+ (3(K+1)-2)= 1K+7/(3K+3-2) 1+ 1+ 7+ ... + (3K-2)+ (3K+3-2) = 1+4+7+ ... + (3K-2) + /3K+2/= (K+1) (3K+2) 3K3-K + 3K+1 = (K+7) (3K+2) 2 3K2-K + 2(3K+2) = [K+7] (3K+2) 3K+2 2K+2 3K2-K+6K+2=(K+1)(3K+2) 3K2+3K 3K+5K+2=3K2+5K+2 3K+5K+2 Logo, Pelo P.I.F. a fórmula vale yn El

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4. Prove lue 2+4+6+ ... + zn=n(n+1) CB PINI vale Pois 2+4=2(2+1) 6 = 2/3) 6=6 H.S. Vomos Sufor P(K) Vollo Para album K > 7 2+ 4+ 6+ ... + 3 K= K/K+1/ 2+9+6+ ... + 2K = K2+X P.I. vamos Provar PIKTU Valido, ou seja 2+ 4+ 6+ ... + 2K+ 2(K+1/= (K+7) (K+7+1) 2+4+6+ ... + 2K + 2K+2 \* (K+1) (K+2) 2 K2+K+2K+2 = K2+2K+K+2 Logo, pelo P.I.F, a formula vale the EIN 5. Prove que 1+5+9+ ... + (4n-3) = n(2n-1), \ n \ N CB. P(1) vale Pois  $\gamma = M(2n-7)$ 7=1 (2.7-1) 7=7 H.I. Vamos Sufor Ptky Velisa Para algum K>7 7+5+9+ ... + (4K-3) = K(2K-7) 1+5+9+ ... + (4K-3) = 2K2-K P. I Vamos Provar P(K+1) Válido, on Seja 1+5+3+ ... + (4K-3) + (4(K+1)-3) = (K+1) (2(K+1)-1) 1+5+3+ ... + (4K-3) + (4K+4-3) = (K+7) (2K+2-1) 1+5+9+ ... + (4K-3) + (4K+1) = (K+1)(2K+1) 2K2-K+ (4K+9) = 2K2+K+2K+9  $2K^2 + 3K + 7 = 2K^2 + 3K + 1$ 6030, pelo P. I. F., a formula vale & n E

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6. Prove que 3+6+9+ ...+3n = 3n(n+2) Yn EM P(1) Vale, Pois I. Vamos supor P(K) Válido Para alsum K>7 3+6+ 9+ ... + 3K = 3K(K+7) 3+6+9+ ... +3K= 3K2+3K P. I. Vamos Provar P(K+7) yo lips, ou sesa K+2 3+6+9+...+3K+3(K+1/=3(K+1)((K+1)+1) 3K+3 3+6+3+ ... + 3K+3K+3 = BK+3/(K+2) - 3K+6K 3K + 9K 3K2+3K+3K+3=3K+9K+6 3K2+3K+6K+6=3K2+9K+6 3K2+3K+6= 3K2+9K+6 Lago, Pelo P. I.F. a formula vale yne

7. Prove que 2.1+2.2+2.3+ ...+ 2n= n2+n, & n = /N CB P(1) Vale Pois 2.1+2.2=22+2 2+9=9+2 H. I Vamos supor P(K) Volido para gigum K>7 2.7+2.2+2.3+ ... + 2K= K2+K P. I Vamos Provar P(K+1) Volivo, ou Sesa 2.1+2.2+2.3+...+2K+2(K+1)=(K+1)2+(K+1) K2+ K + 2K+2 = K2+ 2K+7 + K+1 K2+3K+2=K2+3K+2 Logo, pelo P. I.F., a formula Vale yn Ell Level Proves Plant Tolk Street Land I X 1 ( - 1) + 3 ( x 2 x ) = 1 ( + 3 x + 2 x KIK THE STREET STREET NE - K + 3K + 4K = K + M + M - SH AS SELD RT F & Hermally WALLE HA tilibra

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8. Prove que, Para n > 2,
         i (i+?) = n(n-v (n+1)
          H. I Vanet Hele of the little in the second to the
        i(i+1) = 1.2+2.3+3.9+ ...+ (n-1)n= n(n-1)(n+1)
          11+12+20 1X = 1+1/5 + XS+ .... 103 3 55+1.0
                     2 = \frac{6}{3}
HI. Vomos Sufor P(K) Válisa Para G/34m K=2 K3+3K+2K
1.2+2.3+3.4+...+ (K-1)K = K/K-1/(K+V)
P. I Vamos Provar P(K+1) volido, ou sesa,
1.2 + 2.3 + 3.4 + ... + (K-7) K + (K+1-7) (K+1)=
       K((K-1)(K+1))+ K(K+1) = (K+1)(K)(K+2)
       K(K2+K-K-7) + K2+K= K3+3K2+2K
      K (K2-1) + 3(K2+K) = K3+3K2+2K
     K(K2-1)+3(K2+K) = K3+3K2+2K
    K3-K+3K2+3K= K3+3K2+2K
K3+3K2+2K= K3+3K2+2K
LOGO, Relo P.I.F, a formula vole Yn EIN
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9. Ache a formula fechada fara  $\frac{1+1+1+1+\dots+1}{n(n+1)}$ = 1 1 + 1 2 + 1 = 4 = 3 1 + 1 = 4 = 3 1 + 1 = 4 = 3 1 + 1 = 4 = 3 CB P(1) Vale Pois = ++ ; Loso a tormula é n I. I K> 1 to P(K) = P(K+1), on Seta, +12 +1+...+1 = K +1+1+ 1 + 1 + 1 = K+1 6 . K(K+1) K+1 2 6 K(K+1) (K+1) (K+2) K+2 P. I. Usanjo H. I. (K+2) K + 1 = K+1 (K+2) (K+1) - (K+1) (K+2) K+2! K2+2K+1 = (K+1)(K+1)= K+1 [K+2] [K+2] - (K+2) (K+1) \* (K+2) 3/44/18/9 3 1/9-0/99 K+1 = K+1 K+2 K+2 11090, a formula é Válla Vn EIN

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10. Prove que 6 -1 é múltirlo de 5, Yn El 6"-1= 5. algum número C3 P(1) Vale, Pois
6-1-5
6-1-5.1 H. I Pana cityum K consigo encontrar JE / tal que 6 = 7 = 5. J, também 6 = 55+7 200 make + 219 = 1219 + + 2 x + x + x + x + x + x P.I. Vomos Provan PIK+1) Válido, ou seja, 6 K. 67-1= (5]+1/67-7 5.6.J + 5.7 5 (6J+7) 6.9.0  $P(K) \neq P(K+1)$   $P(E) = P \cdot I \cdot F \cdot P(E) = P(E)$ tilibra

2.2.1.1	
11. Prove que 5 -1 é múltiplo de 4,	Ynell
5"-1= 9. algum nomero	CE PIN WEEKS
	- E = 6 - B
CB. P(1) Vale, Pols	4-7-3
5-1=9	4-1=3.7
5-1=4.1	HE PORT WHEN Y COM
H.I. Para algum K consigo encontrar	Julios Was
JE IN	15.953.5
5-1=4.5	1772:00
5 = 41+1 at 32 ma will be to xx	Q T Vaned Privar P.
P. I Vams Provar P(K+7) Válido on SeJa,	1 433
5 1-1	25 92.9
5.5-1	(35+1114-1)
(47+1) (5-1)	35+1.3-7
47 +9.1	5.8.1+ L.P.E.
9.3.J+9.1	17+13/18 -
4 (5 5 + 2) 400 100 300 300 300 300	13. PAVE PUE 35
	63 P(3) Vale Pals
	3=1-18
	1.3=1-1
issa encontrol	H.T. Park album II P
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nett with our fetter team	El yand Pror Pl
	6 19Mg
	1 Felle
	(0-1) (1-10)
	12-21 (2-2)
	D. eldeste
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	(IIIDIG)

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12. Prove que 4"-1 é múltiple de 3, para todo nEIN
CB P(1) Vale, Pois
4-7=3
4-7:3 100 600
HI. Para algum K consigo encontrar

J E IN tal que
4 K 1 = 3 . J = 1 K CONTINUE ENCOREMENT
P. I Vomos Provor P(K+V Volivo, on Seja,
4×.9<sup>2</sup>-7
(3J+2)(4<sup>2</sup>-7)
3J+1.3.7
3.9.J+1.3.7
3 (4J+2)

13. Prove que 3 - 1 é multiplo de 2, pora todo KEIN
3-1=2 P(1) Vale Pois
3-1=2.7
 I Para algum 17 Posso encontrar
  -1=2.J
P.I vomos Provar P(n+7) válido, ou seja,
 25+1) (2.1)
tilibra 2.3.7+1.2.1
     2(35+1)
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