2º bimestre:

Tarefa básica

Semana 10

1) a. $4! = 4 \cdot 3 \cdot 2 \cdot 1 = 24$ //

b. $6! - 6! = 120 - 720 = -600$ //

c. $\frac{9!}{6!} \quad \frac{9 \cdot 8 \cdot 7 \cdot 6 \cdot \not{6}}{\not{6}} = 504$ //

d. $\frac{98!}{100!} \quad \frac{\not{98}}{100 \cdot 99 \cdot \not{98}} = \frac{1}{9900}$ //

2. $\frac{1}{n!} - \frac{n}{(n+1)!} = \frac{1}{(n+1)\,n!}$

$\frac{1}{n!} - \frac{n}{(n+1)\,n!} =$

$\frac{1}{n!}\left(1 - \frac{n}{n+1}\right) = \frac{1}{n!\,(n+1)} = \frac{1}{(n+1)!}$ //

3. $\frac{(n)^2-(n-1)!\,n!}{(n-1)!\,n!} = \frac{n!\cdot n!-(n-1)!\,n!}{(n-1)!\,n!}$ (A)

$\frac{n!-(n-1)!}{(n-1)!} = \frac{n\cdot(n-1)!-(n-1)!}{(n-1)!} = \frac{n-1}{1} = n-1$ //

4. $\frac{(n+2)!\,(n-2)!}{(n+1)!\,(n-1)!} = 4 \qquad \frac{(n+2)!}{(n+1)!}\cdot\frac{(n-2)!}{(n-1)!} = 4$

$\frac{(n+2)\cdot(n+1)!}{(n+1)!}\cdot\frac{(n-2)!}{(n-1)\cdot(n-2)!} = 4$

$\frac{(n+2)}{(n-1)} = 4$ $\qquad n+2 = 4(n-1)$ (A)

$n+2 = 4n-4$

$4n-n = 2+4$

$3n = 6$

$n = 2$ //

5. $\frac{(n+1)!-n!}{(n+1)!} = \frac{7}{n+1} \qquad \frac{(n+1)\cdot n!-n!}{(n+1)!\,n!} = \frac{7}{n+1}$

$\frac{n!(n+1-1)}{(n+1)\cdot n!} = \frac{7}{n+1} = \frac{n+1-1}{n+1} = \frac{7}{n+1}$

$\frac{n}{n+1} = \frac{7}{n+1}$ $\qquad n = 7$ //

6. $(n-1)!\,[(n+1)!-n!]$

$(n-1)!\,[(n+1)\,n!-n!$

$n!^2$

7. $\dfrac{n!+(n-1)!}{(n+1)!-n!} = \dfrac{6}{25}$ $\qquad \dfrac{n(n-1)!+(n-1)!}{(n+1)\,n(n-1)!-n(n-1)!}$

$\dfrac{n+1}{(n+1)n-n} \quad \dfrac{n+1}{n(n+1)-1} \Rightarrow \dfrac{n+1}{n^2} = \dfrac{6}{25}$

$25(n+1) = 6n^2$

$25n+25-6n^2=0$

$-6n^2+25n+25=0$

$a=30 \quad b=-5$

$-1+150=149$

$-2+75=73$

$-3+50=47$

$-5+30=25$

$-6+25=19$

$-10+15=5$

$(-6n^2+30n)+(-5n+25)$

$6n(-n+5)+5(-n+5)$

$(-n+5)(6n+5)$

$n=5$ //

8. $21!-221$

990

221

$7\,7\,0$

$21 \to x \cdot 1000$

$1\cdot 2\cdot 3\cdot 4\cdot 5\cdot 6\cdot 7\cdot 8\cdot 9\cdot 10\cdot 11\cdot 12\cdot 13\cdot 14\cdot 15\cdot 16\cdot 17\cdot 18\cdot 19\cdot 20\cdot 21$

$2\cdot 10$

$10\cdot(2\cdot 5)\cdot 10 = 1000$