Tarefa básica

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

b) $5! - 6! = 5! - 6 \cdot 5!$

$5!(1 - 6)$

$120 : 5 = -600$ //

c) $\frac{9!}{6!} \rightarrow \frac{9 \cdot 8 \cdot 7 \cdot 6!}{6!} \rightarrow 9 \cdot 8 \cdot 7 = 504$ //

d) $\frac{98!}{100!} \rightarrow \frac{98!}{100 \cdot 99 \cdot 98!} \rightarrow \frac{1}{100 \cdot 99} = \frac{1}{9900}$ //

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

(A)

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

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

(A)

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

$\frac{(n+2)}{(n-1)} = 4$ // $\rightarrow (n+2) = 4(n-1) \rightarrow (n+2) = 4n - 4$

$-3n = -6$

$n = 2$

(A)

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

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

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

$(n-1)!(n+1-1)n! \rightarrow (n-1)!\,n.n!$

$[(n-1)!.n].n! = n!.n! \rightarrow n!^2$ (D)

7. $\frac{n!+(n-1)!}{(n+1)!-n!} = \frac{6}{25} \rightarrow \frac{n(n-1)!+(n-1)!}{(n+1)n!-n!} = \frac{6}{25}$

$\frac{(n-1)!(n+1)}{(n+1-1)n!} = \frac{6}{25} \rightarrow \frac{(n-1)!(n+1)}{n.n(n-1)!} = \frac{6}{25}$

$\frac{n+1}{n^2} = \frac{6}{25} \rightarrow 25n+25 = 6n^2$

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

$\Delta = 625+600$

$\Delta = 1225$

$x = \frac{25 \pm 35}{12}$ $\begin{cases} x' = 5 \\ x'' = -10 \end{cases}$

$n=5$ (C)

8.

7 (d)