1 - A) $4! = 4.3.2.1 = 24$

B) $5! - 6! = 120 - 720 = -600$

c) $\frac{9!}{6!} = \frac{9.8.7.\cancel{6!}}{\cancel{6!}} = 504$

D) $\frac{98!}{100!} = \frac{\cancel{98!}}{100.99.\cancel{98!}} = \frac{1}{9900}$

2- $\frac{1}{n!} - \frac{n}{(n+1)!} = 0$

$\frac{\frac{(n+1)! - n!}{n!}}{(n+1)!} = \frac{\frac{(\cancel{n}+1).\cancel{n!} - \cancel{n}}{\cancel{n!}}}{(n+1)!} = \frac{1}{(n+1)!}$ Alternativa A

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

$n-1$

Alternativa A

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

$n = \frac{6}{3} = 2$ Alternativa A

Par

5- $\frac{(n+1).\cancel{n!} - n!}{(n+1).\cancel{n!}} = \frac{7}{n+1} = \frac{n}{\cancel{n+1}} = \frac{7}{\cancel{n+1}} \therefore n = 7$ Alternativa D.

6- $n \in \mathbb{N}, n \geq 1$

$(n-1)! [(n+1)! - n!] = ?$

$(n-1)! [(n+1)n! - n!]$

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

$n!\,n! = (n!)^2$ Alternativa D.

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

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

$n+1 = 6$ Alternativa

$n = 5$ C

8- $21! - 221$

$\rightarrow 21!: 5, 15$

$\rightarrow 21!: 10, 20$

$$\begin{array}{r} \dots 0000 \\ -\ 221 \\ \hline 779 \end{array}$$

7 Dezenas

Alternativa

D