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Tarefa Básica

1.

a) $4! = 4.3.2.1 = \underline{\underline{24}}$

b) $5! - 6! = 5.4.3.2.1 - 6.5! \rightarrow 120 - 6.120 =$
$120 - 720 = \underline{\underline{-600}}$

c) $\frac{9!}{6!} = \frac{9!}{6.5.4.3.2.1} = \frac{9.8.7.6!}{720} = \frac{504.720}{720} =$

$\underline{\underline{504}}$

d) $\frac{98!}{100!} = \frac{98!}{100.99.98!} = \underline{\underline{\frac{1}{9900}}}$

2.

$\frac{1}{N!} - \frac{N}{(N+1)!} \rightarrow \frac{1}{N!} - \frac{N}{(N+1).N!} \rightarrow \frac{(N+1).N! - N!(-N)}{N!(N+1.N!)}$

$\rightarrow \frac{N!(N+1).1 + 1(N)}{N!(N+1).N!} \rightarrow N! \frac{1}{N!(N+1).N!}$

$\rightarrow \frac{N!}{N!(N+1)} = \underline{\underline{\frac{1}{(N+1)!}}}$ (A)

3-

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

$$\frac{N\,[\,N - (N-1)!\,(N-1)!\,]}{(N-1)!\,N.(N-1)!} \rightarrow \frac{N - (N-1)!}{(N-1)!} =$$

$N-1$ (A)

4-

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

$$\frac{N+2}{N-1} = \frac{4}{1} \qquad N+2 = 4N-4 \qquad 4+2 = 3N \qquad \frac{6}{3} = N \qquad N = 2$$

(A)

5-

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

$$\frac{N![\,(N+1) - 1\,]}{(N+1).N!} = \frac{7}{N+1} \rightarrow \frac{N+1-1}{N+1} = \frac{7}{N+1}$$

$$\frac{N}{N+1} = \frac{7}{N+1} \qquad N^2 + N = 7N + 7 \qquad \Delta = b^2 - 4AC$$

$$N^2 - 6N - 7 = 0 \qquad \Delta = 36 + 28$$

$$\Delta = 64$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2A}$$ (D)

$$x' = \frac{6+8}{2} = 7 \qquad x'' = \frac{6-8}{2} = -1$$

D NÃO pode ser negativo

S T Q Q S S D

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6- N e N $(N-1)![(N+1)! - N!]$

$N \geq 1$

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

$(N-1)![(N+1).N.(N-1)! - N.(N.1)!]$

$(N-1)![(N-1)![(N+1).N - N]]$

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

$(N-1)![(N-1)![(N).(N)]]$

$(N-1)![(N-1)![N^2]]$

$(N-1)![(N-1)!(N.N)]$

$[N(N-1)!].[N.(N-1)!]$

$(N!).(N!) = (N!)^2$

(D)

7-

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

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

$(N+1).N - N = 25$

$N^2 = 25$

$N = 5$

(C)

8- 21! - 221 → Algarismo das dezenas

$(21.20.19.18.17.16.15.14.13.12.11.10.9.8.7.6!) - 221$

420 342 272 210 156 110 504 720

51090942171709440000 - 221 =

51090942171709439779 → dezenas

(D)