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TURMA 348

I. V) $4! = 4 \cdot 3 \cdot 2 \cdot 1 = 24$

B) $\boxed{5!} - \boxed{6!} = \boxed{120} - \boxed{720} = -600$

C) $9! / 6! = 9 \cdot 8 \cdot 7 \cdot 6! = 504$

D) $98! / 100! = 100 \cdot 99 \cdot 98! = 1/9900$

II. $\dfrac{1}{N!} - \dfrac{N}{(N+1) \cdot N!} \Rightarrow \dfrac{(N+1) \cdot 1}{(N+1) \cdot N!} - \dfrac{N}{(N+1) \cdot N!} \Rightarrow \dfrac{1}{N!} - \dfrac{N}{(N+1)!} \Rightarrow \dfrac{1}{N!} - \dfrac{N}{(N+1)N!}$

$\dfrac{(N+1) \cdot 1}{(N+1) \cdot N!} - \dfrac{N}{(N+1) \cdot N!} \Rightarrow \dfrac{N+1-N}{(N+1) \cdot N!} = \dfrac{1}{(N+1) \cdot N!} \Rightarrow \boxed{\dfrac{1}{(N+1)!}}$

(LETRA "A")

$$\text{III-} \quad \frac{N!\,(N! - (N-1)!)}{(N-1)!\,N!} = \frac{N! - (N-1)!}{(N-1)!}$$

$$\Downarrow \qquad\qquad\qquad\qquad \Downarrow$$

$$\frac{N \cdot N - 1! - (N-1)!}{(N-1)!} = \frac{N-1!\,(N-1)}{N-1!} = \boxed{N-1}$$

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

$$N+2 = 4.(N-1)$$
$$N+2 = 4N-4$$
$$4+2 = 4N-N$$
$$6 = 3N \rightarrow \underline{N=2} \quad (\text{LETRA "A"})$$

$$\text{V-} \frac{(N+1)! - N!}{(N+1)} = \frac{7}{N+1}$$

$$\downarrow$$

$$\text{I-} (N+1)! = (N+1)\,N! \qquad \text{II-} \frac{(N+1).\,N! - N}{(N+1).\,N!} = \frac{7}{N+1}$$

$$\frac{N!\,(N+1-1)}{N!\,(N+1)} = \frac{7}{N+1} \rightarrow \frac{N}{N+1} = \frac{7}{N+1} \rightarrow 7 \quad (\text{LETRA "D"})$$

$$\text{IV-} \quad \frac{(N+2)!\,(N-2)}{(N+1)!\,(N-1)} = 4 \quad \Rightarrow \quad \frac{(N+2).(N+1)!\,(N-2)!}{(N+1)!\,(N-1).(N-2)!} \cdot \frac{(N+2)}{(N-1)} = \boxed{4}$$

$$N+2 = 4.(N-1)$$
$$N+2 = 4N-4$$
$$4+2 = 4N-N$$
$$6 = 3N \Rightarrow \underline{N=2} \quad (\text{LETRA "A"})$$

$$\text{V-} \quad \frac{(N+1)!-N!}{(N+1)} = \frac{7}{N+1}$$

$$\text{I- } (N+1)! = (N+1)N! \qquad \text{II-} \frac{(N+1).N!-N}{(N+1).N!} = \frac{7}{N+1}$$

$$\frac{N!\,(N+1-1)}{N!\,(N+1)} = \frac{7}{N+1} \Rightarrow \left(\cdot \frac{N}{N+1} = \frac{7}{N+1} \Rightarrow 7 \quad (\text{LETRA "D"}) \right.$$

$$\text{VI- } (N-1)!\,[(N+1)!-N!]$$

$$(N-1)!\,.\,(N+1).N!-N!$$
$$(N-1)!\,.\,N.N!$$
$$[(N-1).N].N!$$
$$N!\,.\,N! = \boxed{(N!)^2} \quad (\text{LETRA "D"})$$