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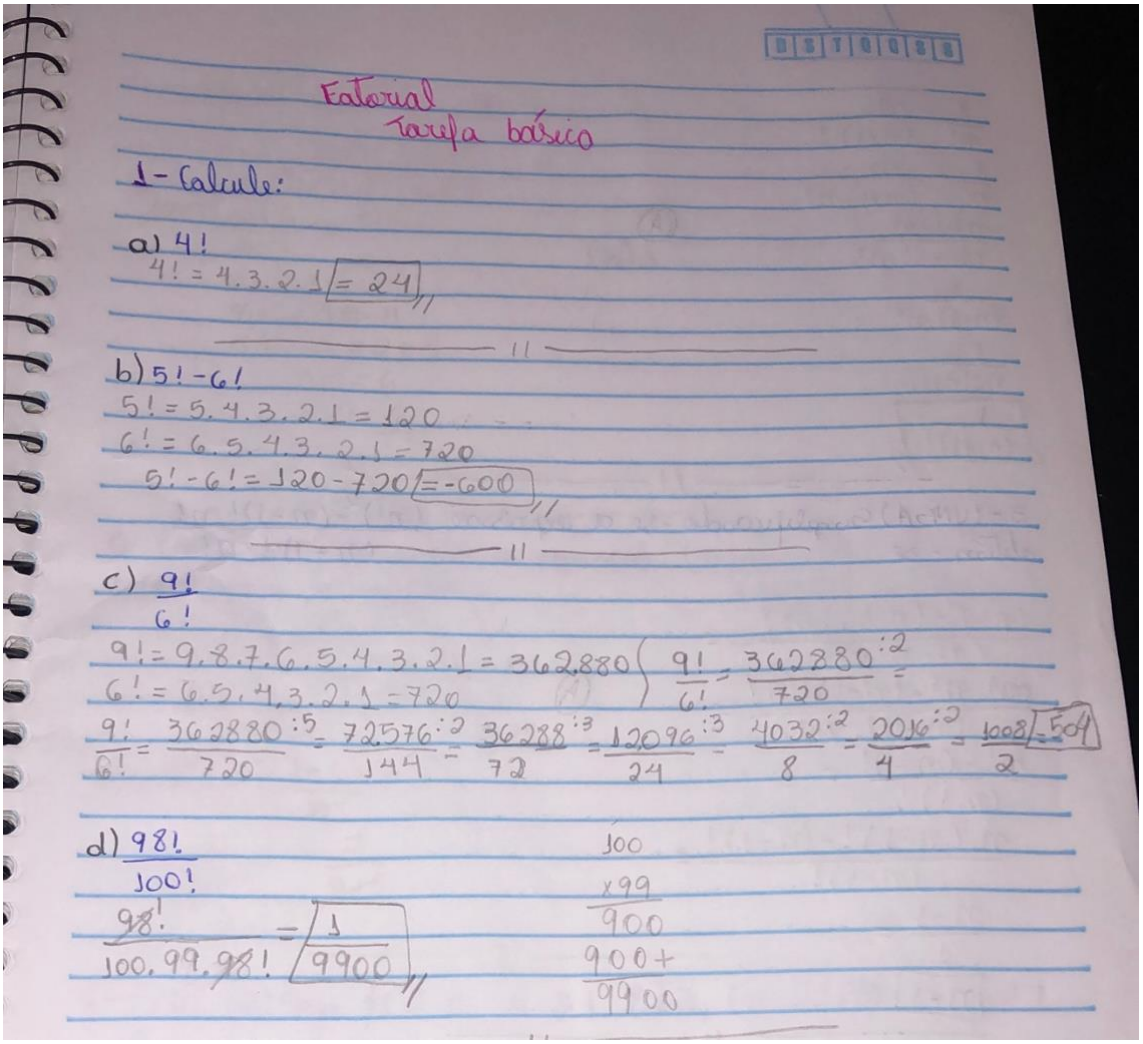
Turma: CTII 350

Tarefa Fatorial

1-



2-

2- (MACK) Efetuando-se $\frac{1}{n!} - \frac{n}{(n+1)!}$ obtém-se

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

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

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

$\frac{1}{(n+1).n!}$

$\frac{1}{n!(n+1)}$

$\boxed{\frac{1}{(n+1)!}}$

3-

3- (UNISA) Simplificando-se a expressão $\frac{(n!)^2 - (n-1)!\,n!}{(n-1)!\,n!}$ obtém-se

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

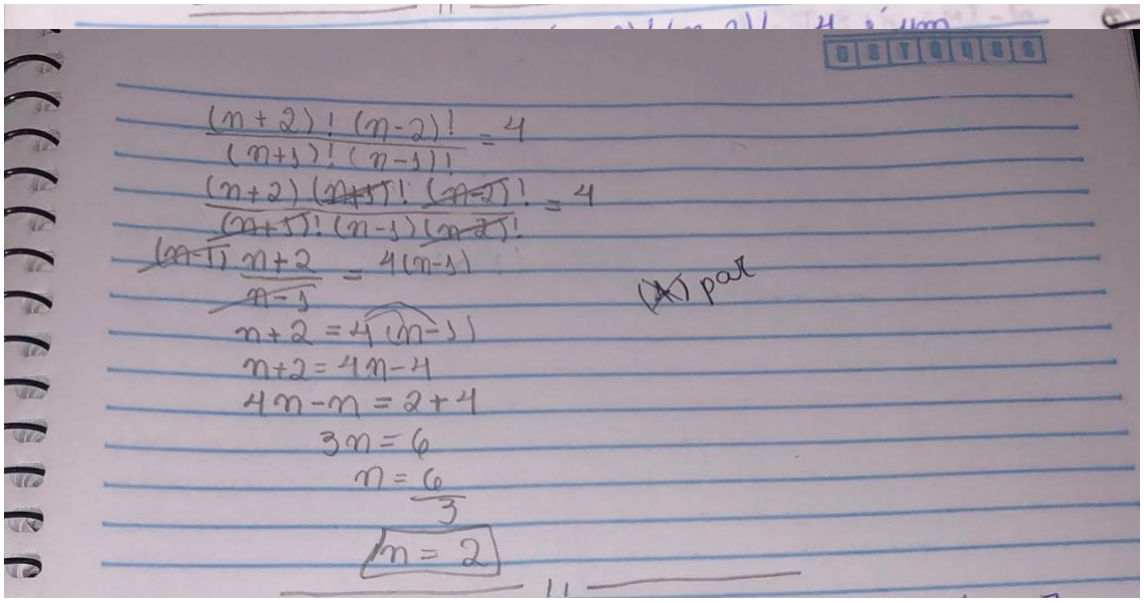
$\frac{n!.n! - (n-1)!.n!}{(n-1)!.n!} =$ (A)

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

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

$\frac{n-1}{1} =$

$\boxed{n-1}$



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

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

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

(X) par

$$n+2 = 4(n-1)$$

$$n+2 = 4n-4$$

$$4n-n = 2+4$$

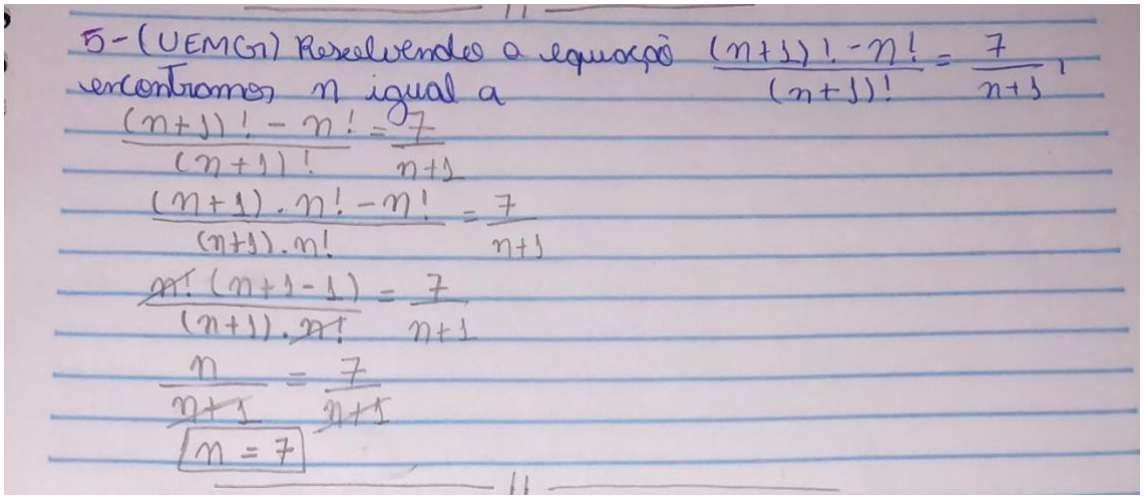
$$3n = 6$$

$$n = \frac{6}{3}$$

$$\boxed{n = 2}$$

4-

5-



5- (UEMG) Resolvendo a equação $\frac{(n+1)!-n!}{(n+1)!} = \frac{7}{n+1}$ encontramos n igual a

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

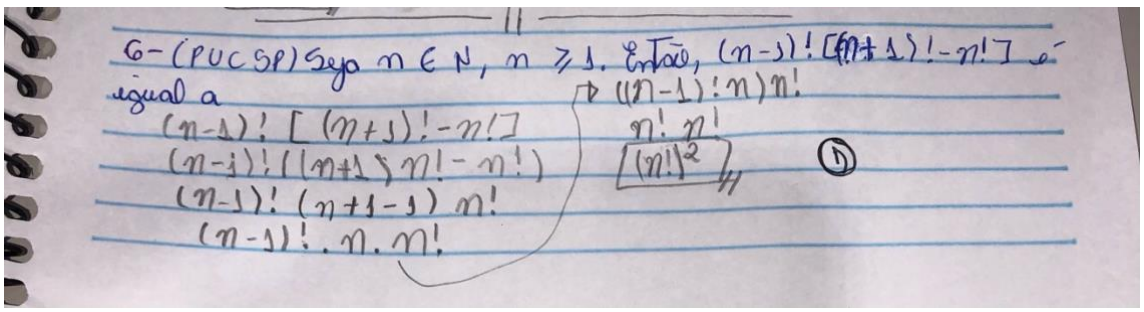
$$\frac{(n+1)\cdot n!-n!}{(n+1)\cdot n!} = \frac{7}{n+1}$$

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

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

$$\boxed{n = 7}$$

6-



6- (PUC SP) Seja $n \in \mathbb{N}$, $n \geq 1$. Então, $(n-1)!\,[(n+1)!-n!]$ é igual a

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

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

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

$$(n-1)!\cdot n\cdot n!$$

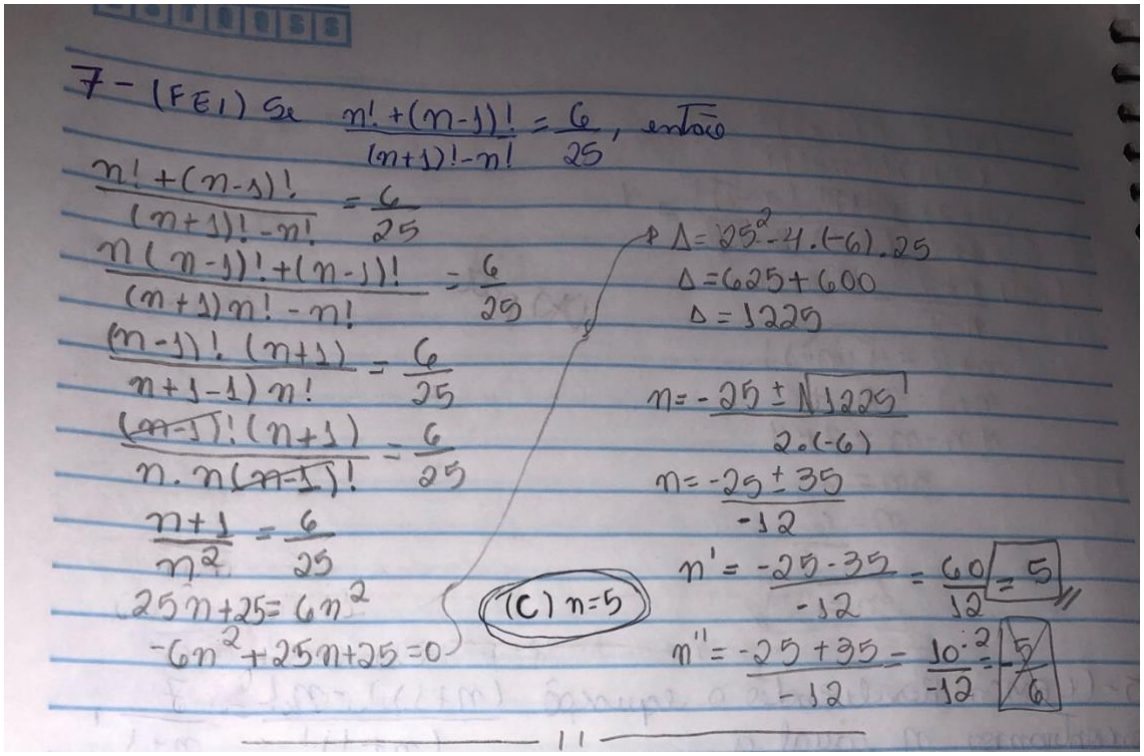
$$(n-1)!\,n\,n!$$

$$n!\,n!$$

$$\boxed{(n!)^2}$$

(D)

7-



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

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

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

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

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

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

$25n + 25 = 6n^2$

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

$\Delta = 25^2 - 4.(-6).25$

$\Delta = 625 + 600$

$\Delta = 1225$

$n = \frac{-25 \pm \sqrt{1225}}{2.(-6)}$

$n = \frac{-25 \pm 35}{-12}$

$n' = \frac{-25 - 35}{-12} = \frac{60}{12} = 5$

$n'' = \frac{-25 + 35}{-12} = \frac{10}{-12} = -\frac{5}{6}$

(C) $n = 5$