INSTITUTO FEDERAL DE EDUCAÇÃO, CIÊNCIA E TECNOLOGIA DE SÃO PAULO – CAMPUS CUBATÃO

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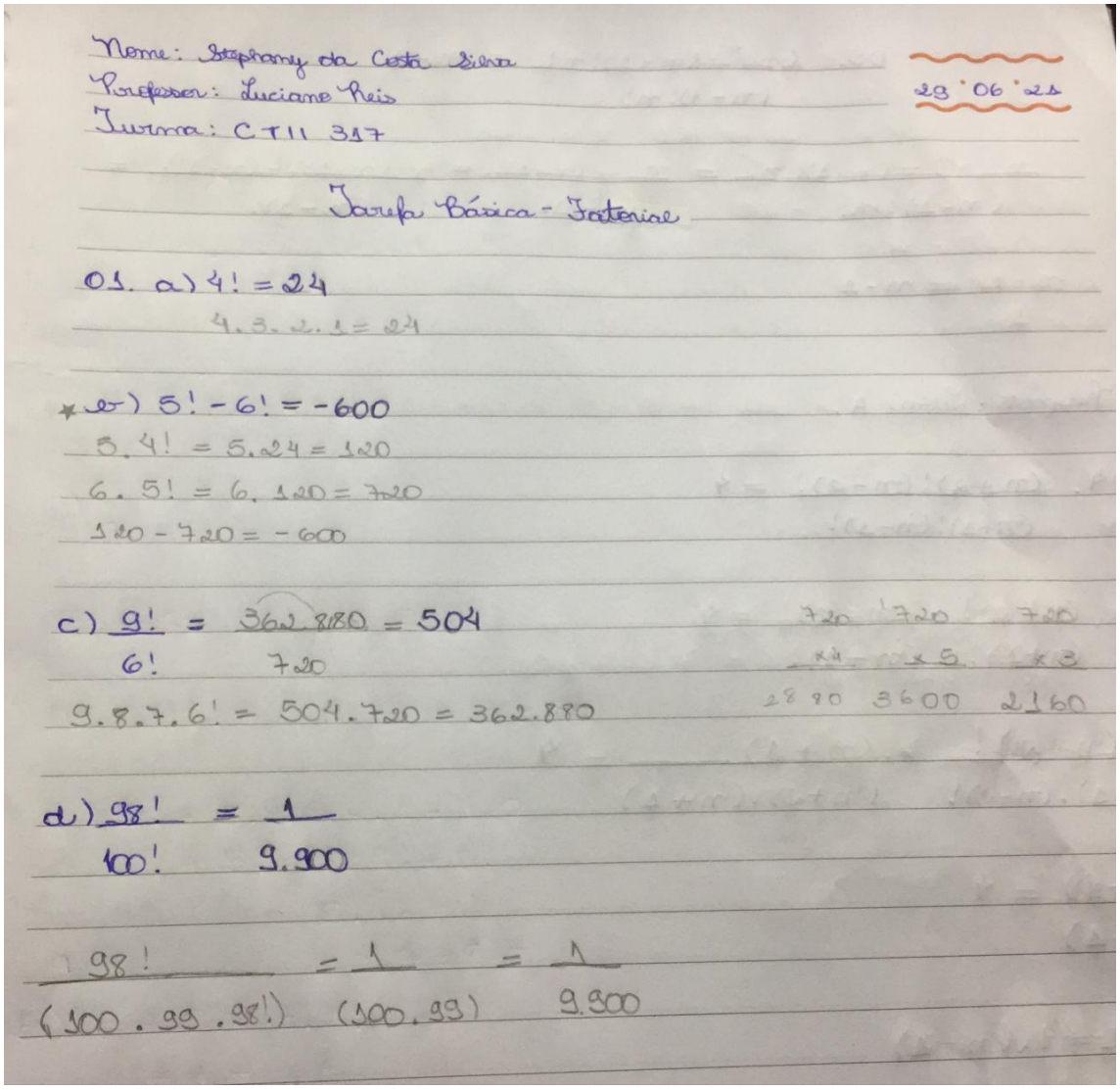
Data: 30/06/2021

Turma: CTII 317

TAREFA BÁSICA – FATORIAL

QUESTÕES

01.



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23 · 06 · 25

Tarefa Básica - Fatorial

01. a) $4! = 24$

$4.3.2.1 = 24$

e) $5! - 6! = -600$

$5.4! = 5.24 = 120$

$6.5! = 6.120 = 720$

$120 - 720 = -600$

c) $\frac{9!}{6!} = \frac{362.880}{720} = 504$

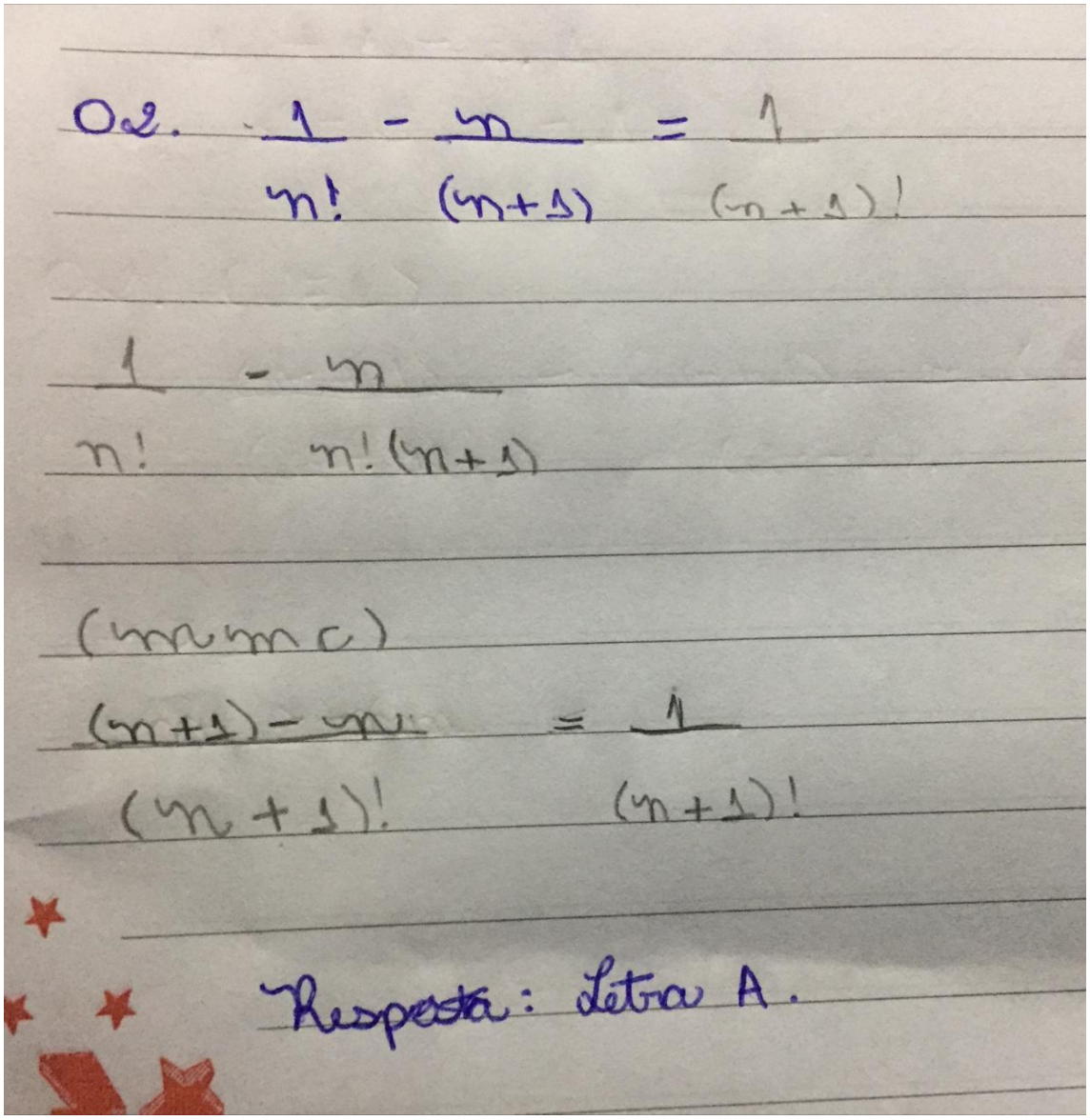
$9.8.7.6! = 504.720 = 362.880$

720 720 720
×4 ×5 ×3
2880 3600 2160

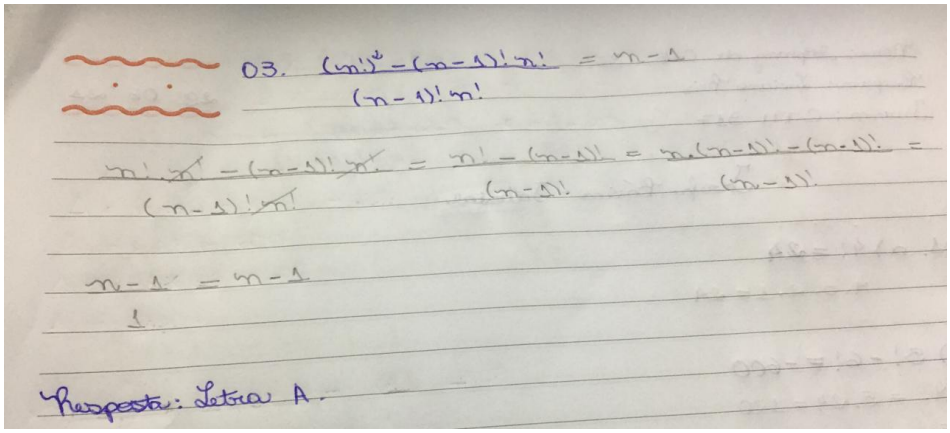
d) $\frac{98!}{100!} = \frac{1}{9.900}$

$\frac{98!}{(100.99.98!)} = \frac{1}{(100.99)} = \frac{1}{9.900}$

02.


02.
1 - n = 1
n! (n+1) (n+1)!
1 - n
n! n!(n+1)
(n+1) - n = 1
(n+1)! (n+1)!
Resposta: Letra A.

03.


03. (n!)² - (n-1)! n! = n-1
(n-1)! n!
n! n! - (n-1)! n! = n! - (n-1)! = n(n-1)! - (n-1)! =
(n-1)! n! (n-1)! (n-1)!
n-1 = n-1
1
Resposta: Letra A.

04.

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

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

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

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

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

$n + 2 = 4n - 4$

$2 + 4 = 4n - n$

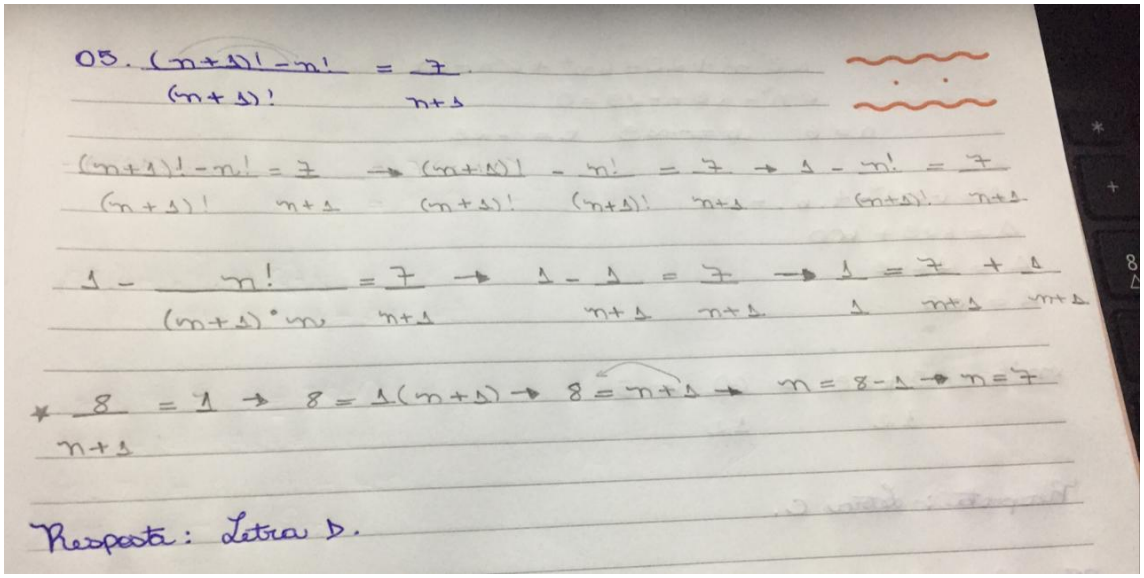
$6 = 3n$

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

$n = 2$

Resposta: Letra A.

05.



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

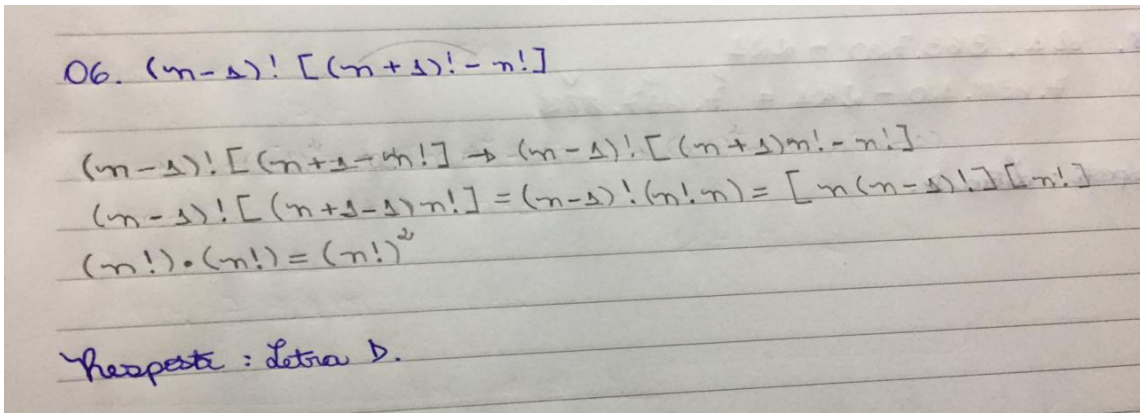
$\frac{(n+1)! - n!}{(n+1)!} = \frac{7}{n+1} \rightarrow \frac{(n+1)!}{(n+1)!} - \frac{n!}{(n+1)!} = \frac{7}{n+1} \rightarrow 1 - \frac{n!}{(n+1)!} = \frac{7}{n+1}$

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

$\frac{8}{n+1} = \frac{1}{1} \rightarrow 8 = 1(n+1) \rightarrow 8 = n+1 \rightarrow n = 8-1 \rightarrow n = 7$

Resposta: Letra D.

06.



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

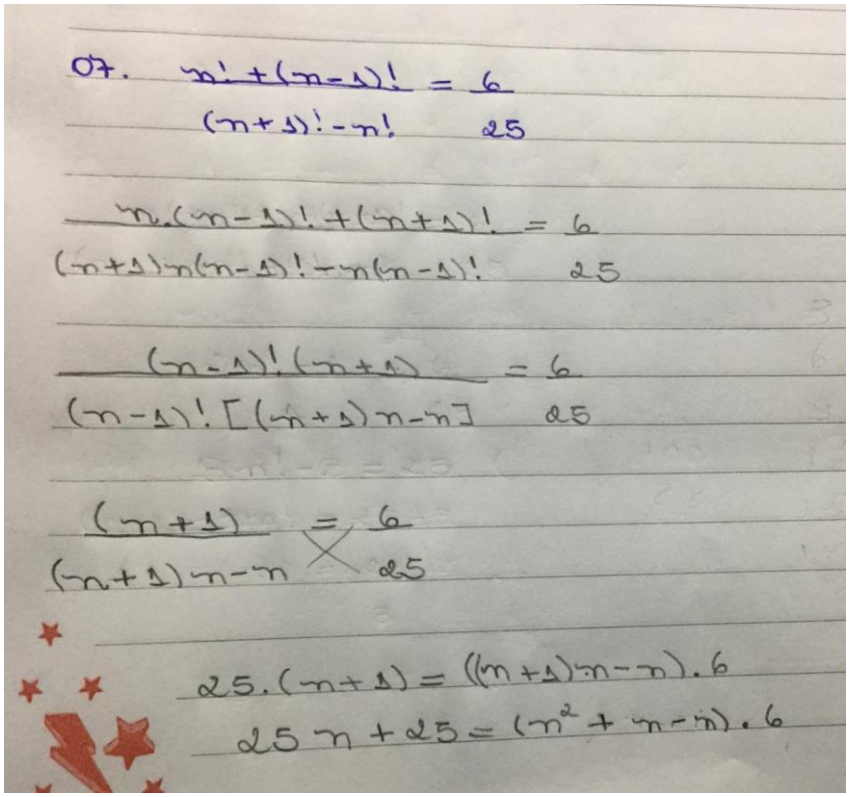
$(n-1)! [(n+1) - n!] \rightarrow (n-1)! [(n+1)n! - n!]$

$(n-1)! [(n+1-1)n!] = (n-1)! (n! \cdot n) = [n(n-1)!] [n!]$

$(n!) \cdot (n!) = (n!)^2$

Resposta: Letra D.

07.



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

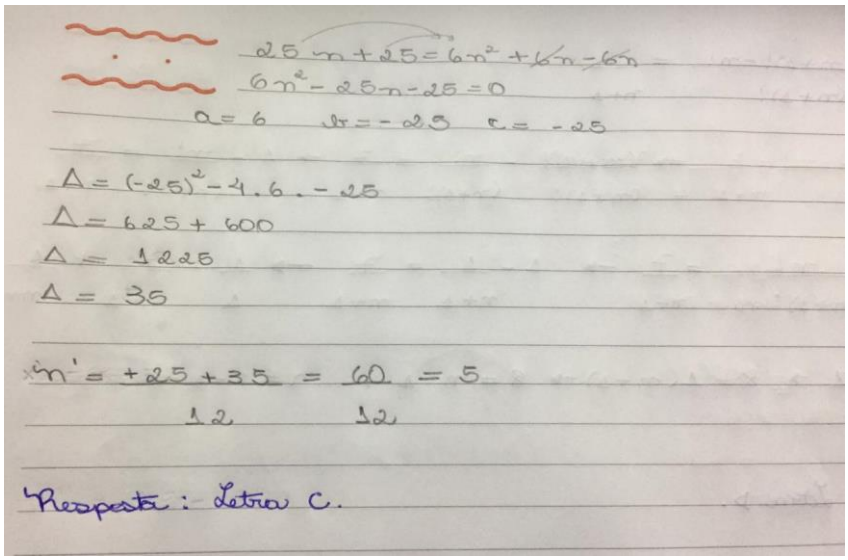
$\frac{n.(n-1)! + (n+1)!}{(n+1)n(n-1)! - n(n-1)!} = \frac{6}{25}$

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

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

$25.(n+1) = ((n+1)n-n).6$

$25n + 25 = (n^2 + n - n).6$



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

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

$a = 6 \quad b = -25 \quad c = -25$

$\Delta = (-25)^2 - 4.6.-25$

$\Delta = 625 + 600$

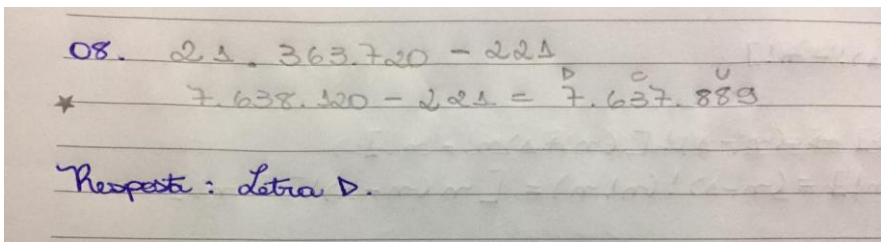
$\Delta = 1225$

$\Delta = 35$

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

Resposta: Letra C.

08.



08. $21.363.720 - 221$

$7.638.120 - 221 = 7.637.889$

Resposta: Letra D.