PRÁCTICA 1

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Ejercicio 1

Find the power set R^3 of $R = \{(1, 1),(1, 2),(2, 3),(3, 4)\}$. Check your answer with the script powerrelation.m and write a LATEX document with the solution step by step.

$$R = \begin{pmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{pmatrix} \tag{1}$$

$$R^2 = R \times R = \begin{pmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{pmatrix} \times \begin{pmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{pmatrix} = \begin{pmatrix} 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix} \tag{2}$$

$$R^3 = R^2 \times R = \begin{pmatrix} 1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix} \times \begin{pmatrix} 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{pmatrix} = \begin{pmatrix} 1 & 1 & 1 & 1 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix} \tag{3}$$

$$R^3 = \{(1,1),(1,2),(1,3),(1,4)\} \tag{4}$$

Comprobación del resultado:

```
>> powerrelation({['1', '1'], ['1', '2'], ['2', '3'], ['3', '4']}, 3)
ans =
{
  [1,1] = 11
  [1,2] = 12
  [1,3] = 13
  [1,4] = 14
}
```

Ejercicio 2

Within the folder “files”, find a TEX file in whose content appears the string \usepackage{amsthm, amsmath}. Note: use grep and escape the special characters with \. Complete the proof and answer the question.

```
adrian@pc-adrian:~$ grep -rnw ./Documentos/files/ -e '\usepackage{amsthm, amsmath}'
./Documentos/files/mainP.tex:6:\usepackage{amsthm, amsmath}
adrian@pc-adrian:~$
```

El archvo a se llama mainP.tex. En él se encuentra la resolución del segundo ejercicio.