Taller usos de LATEX
Tikz - Parte II

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Contenido.

1

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[1]Recuerden que el manual completo de Tikz lo pueden encontrar en este link.

Contenido.

Contenido.

Redes (nodos y enlaces).

```
\begin{tikzpicture}[-,dashed,
auto,
node distance=2cm,
thick,
main node/.style={circle,fill, draw,inner sep=2pt},
sub node/.style={rectangle,
fill=colorClase, draw=black, inner sep=5pt},
every label/.style={font=\sffamily\tiny}]
\node[main node,
label={[label distance=-.01cm]90:{\textbf{1}}}] (1) {};
\node[sub node,
label={[label distance=-.1cm]225:{\textbf{2}}}] (2) [below left of=1] {};
\node[main node,
label={[label distance=-.1cm]315:{\textbf{3}}}] (3) [below right of=1] {};
\path[every node/.style={font=\sffamily\small}]
(1) edge [very thick] (2)
    edge [very thick] (3)
(2) edge [very thick] (1)
(3) edge [very thick] (1);
\end{tikzpicture}
```
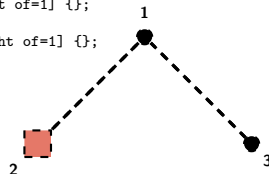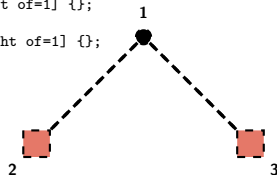
Redes (nodos y enlaces).

```
\begin{tikzpicture}[-,dashed,
auto,
node distance=2cm,
thick,
main node/.style={circle,fill, draw,inner sep=2pt},
sub node/.style={rectangle,
fill=colorClase, draw=black, inner sep=5pt},
every label/.style={font=\sffamily\tiny}]
\node[main node,
label={[label distance=-.01cm]90:{\textbf{1}}}] (1) {};
\node[sub node,
label={[label distance=-.1cm]225:{\textbf{2}}}] (2) [below left of=1] {};
\node[sub node,
label={[label distance=-.1cm]315:{\textbf{3}}}] (3) [below right of=1] {};
\path[every node/.style={font=\sffamily\small}]
(1) edge [very thick] (2)
    edge [very thick] (3)
(2) edge [very thick] (1)
(3) edge [very thick] (1);
\end{tikzpicture}
```
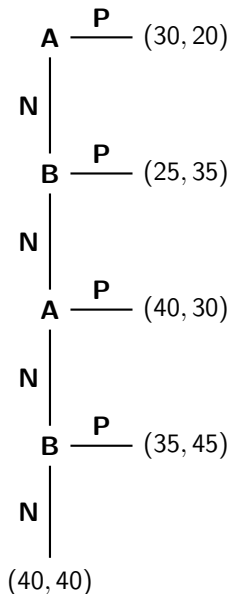
Contenido.

Árboles.

A ——**P**—— $(30, 20)$

N

B ——**P**—— $(25, 35)$

N

A ——**P**—— $(40, 30)$

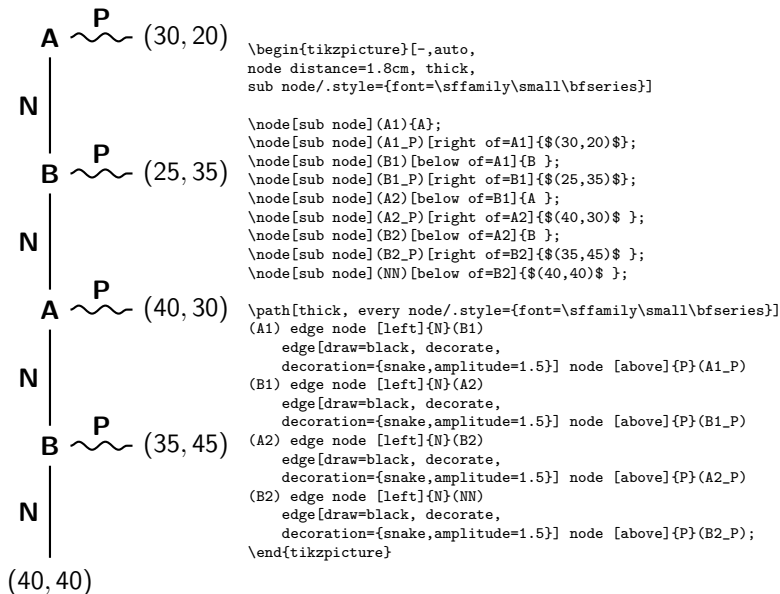**N**

B ——**P**—— $(35, 45)$

N

$(40, 40)$

```
\begin{tikzpicture}[-,auto,
node distance=1.8cm, thick,
sub node/.style={font=\sffamily\small\bfseries}]

\node[sub node](A1){A};
\node[sub node](A1_P)[right of=A1]{$(30,20)$};
\node[sub node](B1)[below of=A1]{B };
\node[sub node](B1_P)[right of=B1]{$(25,35)$};
\node[sub node](A2)[below of=B1]{A };
\node[sub node](A2_P)[right of=A2]{$(40,30)$ };
\node[sub node](B2)[below of=A2]{B };
\node[sub node](B2_P)[right of=B2]{$(35,45)$ };
\node[sub node](NN)[below of=B2]{$(40,40)$ };

\path[thick, every node/.style={font=\sffamily\small\bfseries}]
(A1) edge node [left]{N}(B1)
     edge[draw=black, decorate] node [above]{P}(A1_P)
(B1) edge node [left]{N}(A2)
     edge[draw=black, decorate] node [above]{P}(B1_P)
(A2) edge node [left]{N}(B2)
     edge[draw=black, decorate] node [above]{P}(A2_P)
(B2) edge node [left]{N}(NN)
     edge[draw=black, decorate] node [above]{P}(B2_P);
\end{tikzpicture}
```

Árboles.

A $\sim\!\!\sim$ **P** $(30, 20)$

N

B $\sim\!\!\sim$ **P** $(25, 35)$

N

A $\sim\!\!\sim$ **P** $(40, 30)$

N

B $\sim\!\!\sim$ **P** $(35, 45)$

N

$(40, 40)$

```
\begin{tikzpicture}[-,auto,
node distance=1.8cm, thick,
sub node/.style={font=\sffamily\small\bfseries}]

\node[sub node](A1){A};
\node[sub node](A1_P)[right of=A1]{$(30,20)$};
\node[sub node](B1)[below of=A1]{B };
\node[sub node](B1_P)[right of=B1]{$(25,35)$};
\node[sub node](A2)[below of=B1]{A };
\node[sub node](A2_P)[right of=A2]{$(40,30)$ };
\node[sub node](B2)[below of=A2]{B };
\node[sub node](B2_P)[right of=B2]{$(35,45)$ };
\node[sub node](NN)[below of=B2]{$(40,40)$ };

\path[thick, every node/.style={font=\sffamily\small\bfseries}]
(A1) edge node [left]{N}(B1)
    edge[draw=black, decorate,
    decoration={snake,amplitude=1.5}] node [above]{P}(A1_P)
(B1) edge node [left]{N}(A2)
    edge[draw=black, decorate,
    decoration={snake,amplitude=1.5}] node [above]{P}(B1_P)
(A2) edge node [left]{N}(B2)
    edge[draw=black, decorate,
    decoration={snake,amplitude=1.5}] node [above]{P}(A2_P)
(B2) edge node [left]{N}(NN)
    edge[draw=black, decorate,
    decoration={snake,amplitude=1.5}] node [above]{P}(B2_P);
\end{tikzpicture}
```
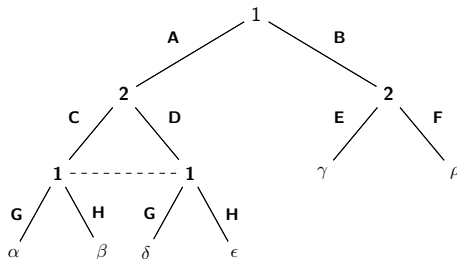
Árboles.

```
\begin{tikzpicture}[sub node/.style={font=\sffamily\footnotesize\bfseries},
level/.style={sibling distance=50mm/#1,
font=\sffamily\small\bfseries }]
\node (N) {1}
child {
    node  (L_1) {2}
    child {
    node (L_21) {1}
    child {node (L_31) {$\alpha$}}
    child {node (L_32) {$\beta$}}}
    child {
    node (L_22) {1}
    child {node (L_33) {$\delta$}}
    child {node (L_34) {$\epsilon$}}}
    }
child {
    node  (R_1) {2}
    child {node (R_21) {$\gamma$}}
    child {node (R_22) {$\rho$}}
    };

\path (N) edge node [sub node, above left=0.1cm] {A}(L_1)
edge  node [sub node, above right=0.1cm] {B}(R_1)
(L_1) edge node [sub node, above left=0.1cm] {C}(L_21)
edge  node [sub node, above right=0.1cm] {D}(L_22)
(L_21) edge  node [sub node,left=0.1cm] {G}(L_31)
edge node [sub node,right=0.1cm] {H}(L_32)
edge [dashed] (L_22)
(L_22) edge node [sub node, left=0.1cm] {G}(L_33)
edge node [sub node, right=0.1cm] {H}(L_34)
(R_1) edge node [sub node, above left=0.1cm] {E}(R_21)
edge node [sub node, above right=0.1cm] {F}(R_22);
\end{tikzpicture}
```
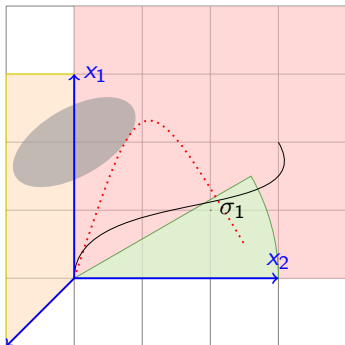
Contenido.

"Ejes".


```
\begin{tikzpicture}[domain=-1:4]
\draw[very thin,color=gray] (-1,-1) grid (4,4);
\fill[fill=red!25, opacity=0.6] (0,0) rectangle (4,4);
\filldraw[fill=orange!25,draw=yellow,
thick, opacity=0.6] (0,0) -- (0,3)--
(-1,3)-- (-1,-1) -- (0,0);
\filldraw[fill=green!20,
draw=green!50!black, opacity=0.6]
(0,0) -- (30mm,0mm) arc (0:30:30mm) -- cycle;
\fill[gray!80, opacity=0.6] (0,2)
circle [x radius=1cm, y radius=5mm, rotate=30];
\draw[red, dotted,
thick] (0,0) .. controls (1,3) .. (2.5,0.5);
\draw (0,0) to [out=90,in=300] (3,2);
\draw[-] (2,1)--(2,1) node [right]{$\sigma_1$};
\draw[->, color=blue,
 thick] (0,0)--(-1,-1);
\draw[->,color=blue,
thick](0,0) --(0,3) node [right]{$x_1$} ;
\draw[->,color=blue,
thick](0,0)--(3,0)node [above]{$x_2$} ;
\end{tikzpicture}
```
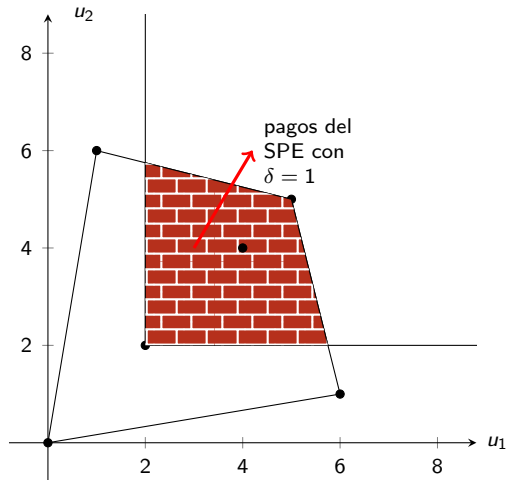
Ejes.
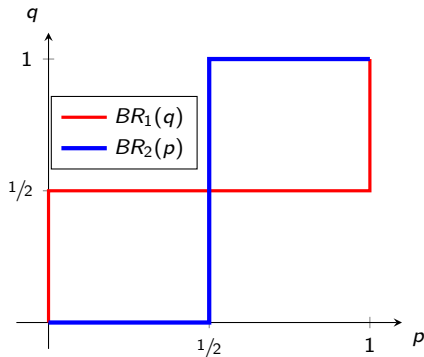

```
\begin{tikzpicture}
\begin{axis}[
%width=10cm,
axis x line=center,xlabel={$p$},
axis y line=center,ylabel={$q$},
xlabel style={below right},
ylabel style={above left},
ytick={0,0.5,1},
yticklabels = {$0$,$\sfrac{1}{2}$,$1$},
xtick={0,0.5,1},
xticklabels = {$0$,$\sfrac{1}{2}$,$1$},
ymin=-0.1,ymax=1.1,
xmin=-0.1,xmax=1.1,
legend style={at={(0.46,0.8)}}]
%legend pos = north]
\addplot[color=red, very thick] table {
0 0
0 0.5
1 0.5
1 1
};
\addplot[color=blue, ultra thick] table {
0 0
0.5 0
0.5 1
1 1
};
\addlegendentry{$BR_1(q)$}
\addlegendentry{$BR_2(p)$}
\end{axis}
\end{tikzpicture}
```

Ejes.
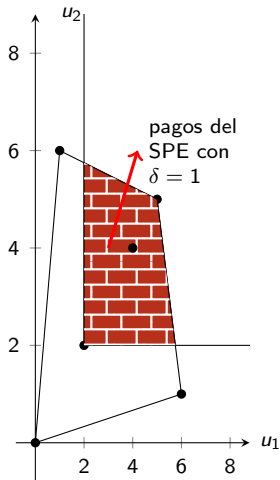

```
\begin{tikzpicture}
\begin{axis}[
width=9cm,
unit vector ratio*=1 2,
axis x line=center,
axis y line=center,
enlargelimits=true,
xlabel={$u_1$},
ylabel={$u_2$},
xlabel style={right},
ylabel style={right=0.2cm},
ymin=0,ymax=8,
xmin=0,xmax=8,
yticklabel style={anchor=east},
font=\sffamily\scriptsize]

\node at (0,0)[circle, scale=0.3,draw=black,fill=black]{};
\node at (2,2)[circle, scale=0.3,draw=black,fill=black]{};
\node at (5,5)[circle, scale=0.3,draw=black,fill=black]{};
\node at (1,6)[circle, scale=0.3,draw=black,fill=black]{};
\node at (6,1)[circle, scale=0.3, draw=black,fill=black]{};
\draw(0,0)--(1,6)--(5,5)--(6,1)--(0,0);
\draw(10,2)--(2,2)--(2,10);
\draw[fill=BrickRed,postaction={pattern=bricks,
pattern color=white}](2,2)--(2,5.75)--(5,5)--(5.75,2)--(2,2);
\node at (4,4)[circle, scale=0.3,draw=black,fill=black]{};
\draw[<-, very thick,
color=red](4.2,6)node[text width=1.5cm, right,
color=black] {pagos del SPE con $\delta=1$}--(3,4) ;
\end{axis}
\end{tikzpicture}
```
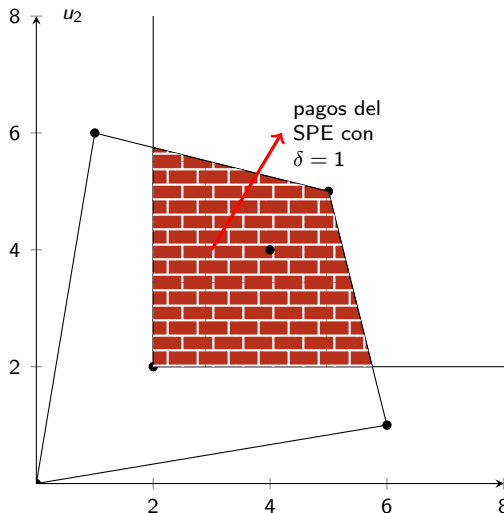
Ejes.


```
\begin{tikzpicture}
\begin{axis}[
width=9cm,
unit vector ratio*=1 1,
axis x line=center,
axis y line=center,
enlargelimits=true,
xlabel={$u_1$},
ylabel={$u_2$},
xlabel style={right},
ylabel style={right=0.2cm},
ymin=0,ymax=8,
xmin=0,xmax=8,
yticklabel style={anchor=east},
font=\sffamily\scriptsize]

\node at (0,0)[circle, scale=0.3,draw=black,fil
\node at (2,2)[circle, scale=0.3,draw=black,fil
\node at (5,5)[circle, scale=0.3,draw=black,fil
\node at (1,6)[circle, scale=0.3,draw=black,fil
\node at (6,1)[circle, scale=0.3, draw=black,f
\draw(0,0)--(1,6)--(5,5)--(6,1)--(0,0);
\draw(10,2)--(2,2)--(2,10);
\draw[fill=BrickRed,postaction={pattern=bricks
pattern color=white}](2,2)--(2,5.75)--(5,5)--(
\node at (4,4)[circle, scale=0.3,draw=black,fil
\draw[<-, very thick,
color=red](4.2,6)node[text width=1.5cm, right,
color=black] {pagos del SPE con $\delta=1$}--(
\end{axis}
\end{tikzpicture}
```

Ejes.


```
\begin{tikzpicture}
\begin{axis}[
width=9cm,
unit vector ratio*=1 1,
axis x line=center,
axis y line=center,
enlargelimits=false,
xlabel={$u_1$},
ylabel={$u_2$},
xlabel style={right},
ylabel style={right=0.2cm},
ymin=0,ymax=8,
xmin=0,xmax=8,
yticklabel style={anchor=east},
font=\sffamily\scriptsize]

\node at (0,0)[circle, scale=0.3,draw=black,fil
\node at (2,2)[circle, scale=0.3,draw=black,fil
\node at (5,5)[circle, scale=0.3,draw=black,fil
\node at (1,6)[circle, scale=0.3,draw=black,fil
\node at (6,1)[circle, scale=0.3, draw=black,f
\draw(0,0)--(1,6)--(5,5)--(6,1)--(0,0);
\draw(10,2)--(2,2)--(2,10);
\draw[fill=BrickRed,postaction={pattern=bricks
pattern color=white}](2,2)--(2,5.75)--(5,5)--(
\node at (4,4)[circle, scale=0.3,draw=black,fil
\draw[<-, very thick,
color=red](4.2,6)node[text width=1.5cm, right,
color=black] {pagos del SPE con $\delta=1$}--(
\end{axis}
\end{tikzpicture}
```

Ejes: funciones.
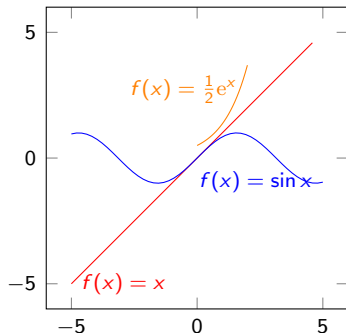

```
\begin{tikzpicture}
\begin{axis}[
width=\linewidth,
unit vector ratio*=1 1,
enlargelimits=true,
ymin=-5,ymax=5,
xmin=-5,xmax=5,
yticklabel style={anchor=east},
font=\sffamily\scriptsize]
\draw[color=red] node[right] {$f(x) =x$}  plot (\x,\x);
\draw[color=blue, samples=50]   plot (\x,{sin(\x r)})
node[left] {$f(x) = \sin x$};
\draw[color=orange] plot[domain=0:2] (\x,{0.5*exp(\x)})
node[below left] {$f(x) =\frac{1}{2}\mathrm e^x$};
\end{axis}
\end{tikzpicture}
```
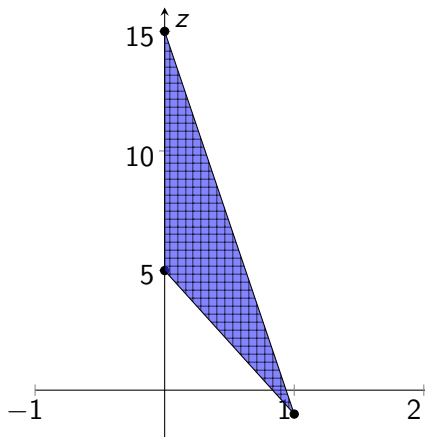
Ejes: 3D.
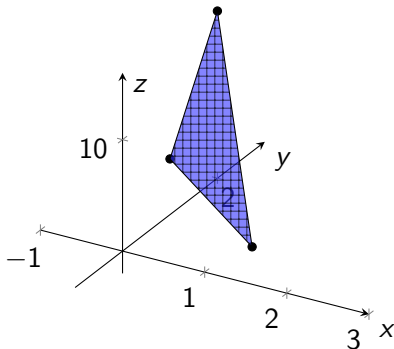

```
\centering
\begin{tikzpicture}
\begin{axis}[
  view={30}{40},
  axis x line=center,
  axis y line=center,
  axis z line=center,
  xlabel={$x$},
  ylabel={$y$},
  zlabel={$z$},
  xlabel style={below right},
  ylabel style={below right},
  ymin=-1,
  ymax=3,
  xmin=-1,
  xmax=3,
  zmin=-2,
  zmax=16,
  legend pos= outer north east]
\node at (1,1,-1) [circle, scale=0.3,
draw=black,fill=black]{};
\node at (0,2,15)[circle, scale=0.3,
draw=black,fill=black] {};
\node at (0,1,5) [circle, scale=0.3,
draw=black,fill=black]{};
\filldraw[fill=blue!80,fill opacity=0.6
,-, postaction={pattern=grid}]
(1,1,-1)--(0,2,15)--(0,1,5)--(1,1,-1);
\end{axis}
\end{tikzpicture}
```
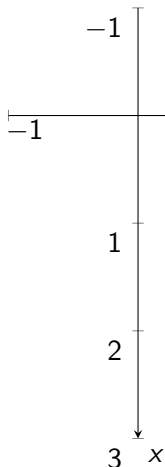
Ejes: 3D.
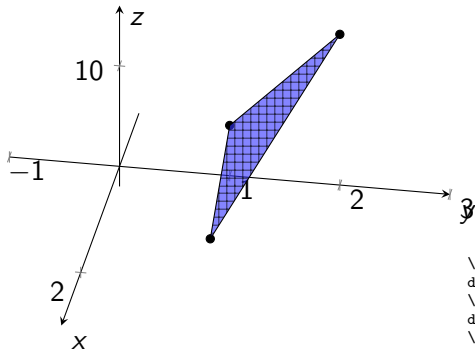

```
\centering
\begin{tikzpicture}
\begin{axis}[
  view={100}{50},
  axis x line=center,
  axis y line=center,
  axis z line=center,
  xlabel={$x$},
  ylabel={$y$},
  zlabel={$z$},
  xlabel style={below right},
  ylabel style={below right},
  ymin=-1,
  ymax=3,
  xmin=-1,
  xmax=3,
  zmin=-2,
  zmax=16,
  legend pos= outer north east]
\node at (1,1,-1) [circle, scale=0.3,
draw=black,fill=black]{};
\node at (0,2,15)[circle, scale=0.3,
draw=black,fill=black] {};
\node at (0,1,5) [circle, scale=0.3,
draw=black,fill=black]{};
\filldraw[fill=blue!80,fill opacity=0.6
,-, postaction={pattern=grid}]
(1,1,-1)--(0,2,15)--(0,1,5)--(1,1,-1);
\end{axis}
\end{tikzpicture}
```

Ejes: 3D - proyecciones.


```
\centering
\begin{tikzpicture}
\begin{axis}[
  view={0}{0},
  axis x line=center,
  axis y line=center,
  axis z line=center,
  xlabel={$x$},
  ylabel={$y$},
  zlabel={$z$},
  xlabel style={below right},
  ylabel style={below right},
  ymin=-1,
  ymax=3,
  xmin=-1,
  xmax=3,
  zmin=-2,
  zmax=16,
  legend pos= outer north east]
\node at (1,1,-1) [circle, scale=0.3,
draw=black,fill=black]{};
\node at (0,2,15)[circle, scale=0.3,
draw=black,fill=black] {};
\node at (0,1,5) [circle, scale=0.3,
draw=black,fill=black]{};
\filldraw[fill=blue!80,fill opacity=0.6
,-, postaction={pattern=grid}]
(1,1,-1)--(0,2,15)--(0,1,5)--(1,1,-1);
\end{axis}
\end{tikzpicture}
```
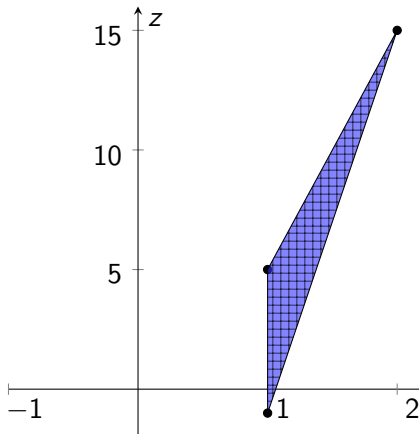
Ejes: 3D - proyecciones.


```
\centering
\begin{tikzpicture}
\begin{axis}[
  view={90}{90},
  axis x line=center,
  axis y line=center,
  axis z line=center,
  xlabel={$x$},
  ylabel={$y$},
  zlabel={$z$},
  xlabel style={below right},
  ylabel style={below right},
  ymin=-1,
  ymax=3,
  xmin=-1,
  xmax=3,
  zmin=-2,
  zmax=16,
  legend pos= outer north east]
\node at (1,1,-1) [circle, scale=0.3,
draw=black,fill=black]{};
\node at (0,2,15)[circle, scale=0.3,
draw=black,fill=black] {};
\node at (0,1,5) [circle, scale=0.3,
draw=black,fill=black]{};
\filldraw[fill=blue!80,fill opacity=0.6
,-, postaction={pattern=grid}]
(1,1,-1)--(0,2,15)--(0,1,5)--(1,1,-1);
\end{axis}
\end{tikzpicture}
```

Ejes: 3D - proyecciones.


```
\centering
\begin{tikzpicture}
\begin{axis}[
  view={90}{0},
  axis x line=center,
  axis y line=center,
  axis z line=center,
  xlabel={$x$},
  ylabel={$y$},
  zlabel={$z$},
  xlabel style={below right},
  ylabel style={below right},
  ymin=-1,
  ymax=3,
  xmin=-1,
  xmax=3,
  zmin=-2,
  zmax=16,
  legend pos= outer north east]
\node at (1,1,-1) [circle, scale=0.3,
draw=black,fill=black]{};
\node at (0,2,15)[circle, scale=0.3,
draw=black,fill=black] {};
\node at (0,1,5) [circle, scale=0.3,
draw=black,fill=black]{};
\filldraw[fill=blue!80,fill opacity=0.6
,-, postaction={pattern=grid}]
(1,1,-1)--(0,2,15)--(0,1,5)--(1,1,-1);
\end{axis}
\end{tikzpicture}
```

Contenido.

Datos externos.

Vertices	Rounds	RRS	QRC
8388608	37	47	727
8388608	38	5731	15709
8388608	39	29072	35103
8388608	40	33027	26904
8388608	41	18914	13062
8388608	42	8141	5291
8388608	43	3177	1999
8388608	44	1179	766
8388608	45	435	273
8388608	46	175	104
8388608	47	59	43
8388608	48	26	11
8388608	49	9	5
8388608	50	6	3
8388608	51	1	0
8388608	52	1	0

En el preámbulo hay que poner \usepackage{pgfplotstable}.

Datos externos.
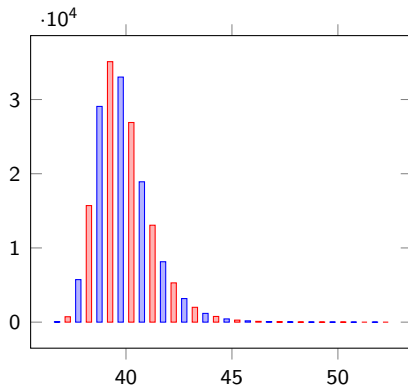

```
\pgfplotstableread[col sep=comma]{otros/datos.csv}{\datos}
\begin{tikzpicture}
\begin{axis}[width=0.5\linewidth,
ybar,bar width=2pt,
font=\sffamily\scriptsize]
\addplot[fill= black] table[x=rounds, y=RRS] {\datos};
\addplot table[x=rounds, y=QRC] {\datos};
\end{axis}
\end{tikzpicture}
```

Contenido.

Ejercicio. (Actividad 6: nombre.tex y nombre.pdf)

En un documento `article` desarrolle lo siguiente:

- Cuadros: pink!50, blue!80, gray!60.
- Letras: green, red.
- Flechas: magenta.
- Opacidad: 0,6.