

Immagini d'esempio per il pacchetto `liLaTeXtikz`

Federico Miceli

estate 2024

Sommario

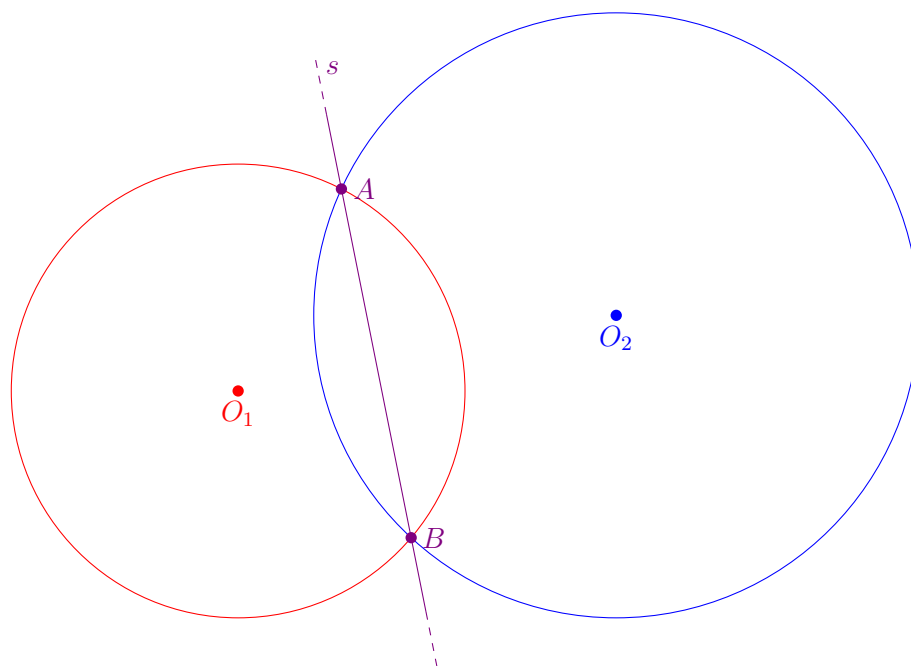
Qui sono contenute alcune immagini d'esempio realizzate col pacchetto `liLaTeXtikz` precedute dal codice con cui sono state generate.

Indice

1	Asse Radicale	2
2	Tangenti alla Circonferenza	3
3	Trapezio rettangolo con diagonale perpendicolare al lato obliquo	4
4	Pendolo	5
5	Sfera e Molla	6
6	Automobili	7
7	Macchina di Atwood	8
8	Scatola su Piano Inclinato con Carrucola	9
9	Scatole su Piano Inclinato Doppio con Carrucola	10
10	Lancio Parabolico	11
11	Torchio Idraulico	12
12	Tubo a U	13
13	Specchi Sferici	14
14	Lente Sferica Convergente	15
15	Lente Sferica Divergente	16

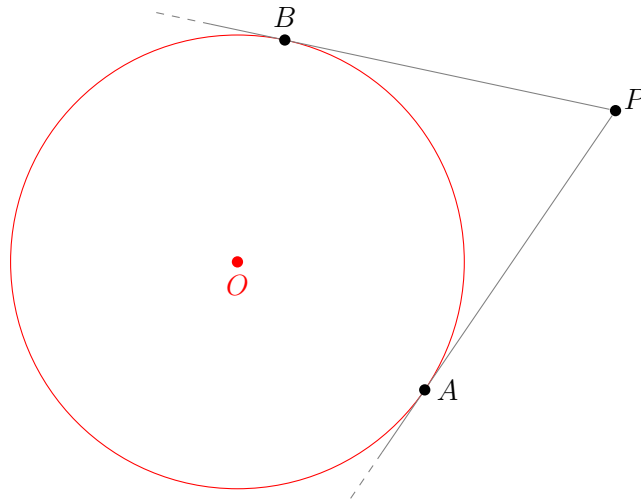
1 Asse Radicale

```
\punto[col=red, lbl=$O_1$, name=Ou]{0,0};
\punto[col=blue, lbl=$O_2$, name=Od]{5,1};
\tikzdef\Runo{3}
\tikzdef\Rdue{4}
\draw[red] (Ou) circle (\Runo);
\draw[blue] (Od) circle (\Rdue);
\interCC{A}{B}{Ou}{\Runo}{Od}{\Rdue};
\retta[col=violet, lbl=$s$, draw length=1]{B}{A};
\pntl[violet]{A}{O}{A};
\pntl[violet]{B}{O}{B};
```



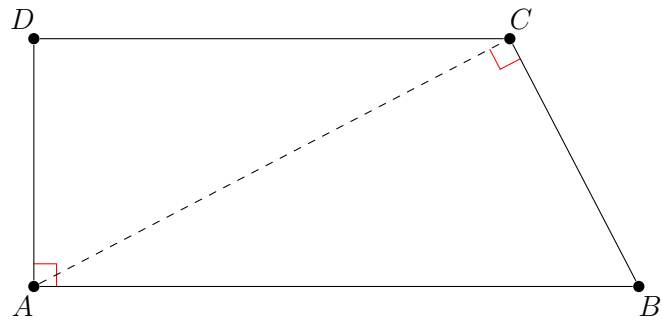
2 Tangenti alla Circonferenza

```
\tikzdef\R{3}
\pnt1[red]{0}{-90}{0,0};
\draw[red] (O) circle (\R);
\pnt1{P}{30}{5,2};
\tangentiPC{A}{B}{P}{O}{\R};
\semiretta[col=gray, draw length=1]{P}{A};
\semiretta[col=gray, draw length=1]{P}{B};
\pnt1{A}{0}{A};
\pnt1{B}{90}{B};
```



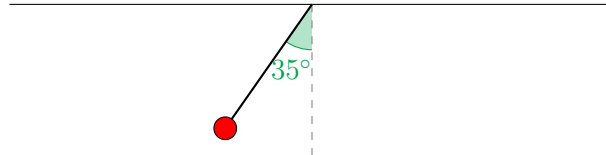
3 Trapezio rettangolo con diagonale perpendicolare al lato obliquo

```
\tikzdef\trapR{4}  
\pntl{A}{-120}{-\trapR,0};  
\pntl{B}{-60}{+\trapR,0};  
\pntl{C}{+60}{55:\trapR};  
\pntl{D}{+120}{C-A};  
\angoloretto[col=red]{B}{A}{D};  
\angoloretto[col=red]{B}{C}{A};  
\draw (A)--(B)--(C)--(D)--(A);  
\draw[dashed] (A)--(C);
```



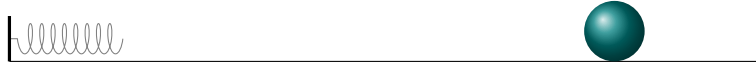
4 Pendolo

```
\tikzdef\ang{35}
\tikzdef\L{2}
\coordinate (F) at (0,0);
\coordinate (C) at ($(F)+(-90-\ang:\L)$);
\coordinate (S) at ($(F)+(0,-\L)$);
\angolo[lbl=$\ang^\circ$, lbl dist=0.3, col=Green, fill]{C}{F}{S};
\draw ($(F)+(-4,0)$) --++ (4*2,0);
\draw[gray, dashed] (F) -- (S);
\draw[thick] (F) -- (C);
\draw[fill=red] (C) circle (0.15);
```

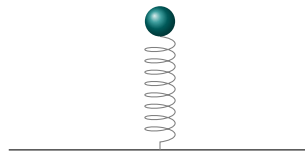


5 Sfera e Molla

```
\molla{0,0.3}{1.5,0.3};
\draw (0,0)--(10,0);
\draw[very thick] (0,0)--(0,0.6);
\tikzdef\Rsfera{0.4}
\sfera[teal]{8,\Rsfera}{\Rsfera};
```



```
\draw (-2,0)--(+2,0);
\molla{0,0}{0,1.5};
\tikzdef\Rsfera{0.2}
\sfera[teal]{0,1.5+\Rsfera}{\Rsfera};
```

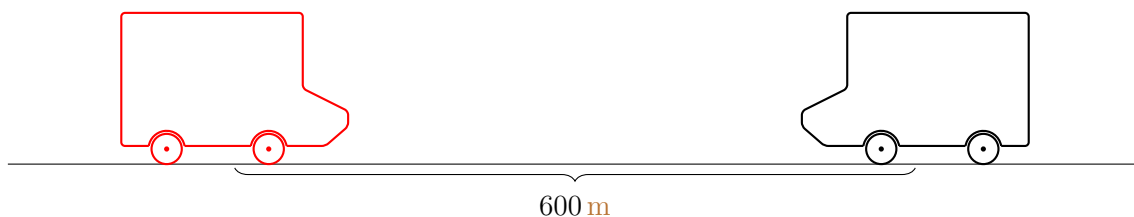


```
\draw[thick] (0,4) -- (0,3) arc (180:270:3) --++ (8,0) coordinate (Est);
\draw[very thick] (Est) --++ (0,0.6);
\molla{$(Est)+(0,0.3)$}{$(Est)+(-1,0.3)$};
\cassa[lbl=$\mathbf{m}$, col fill=blue!20]{0,4}{0.7}{-1}{0};
```

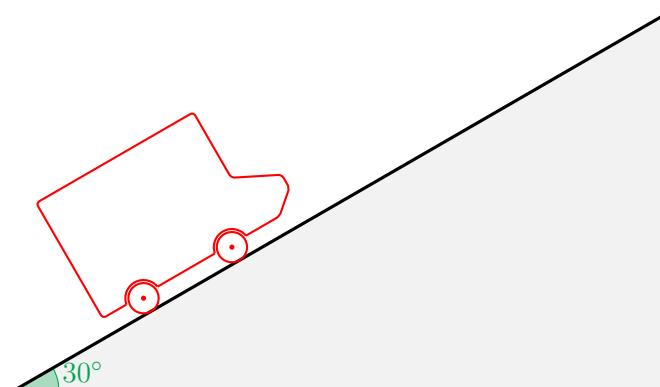


6 Automobili

```
\draw (0,0) -- (15,0);
\auto[col=red]{3,0};
\auto[col=black, mirror]{12,0};
\graffa[lbl=$600\,\SI{m}$]{3,0}{12,0};
```

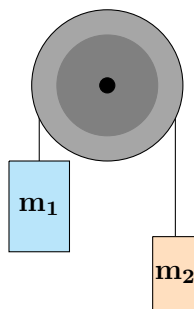


```
\tikzdef\angpi{30}
\coordinate (verticepi) at (0,0);
\coordinate (NEpi) at ($(verticepi)+(\angpi:10)$);
\coordinate (Epi) at (NEpi|-verticepi);
\fill[gray!10] (Epi)--(verticepi)--(NEpi)--cycle;
\angolo[col=Green, lbl=$\angpi^\circ$, fill, lbl dist=0.35]{Epi}{verticepi}{NEpi};
\draw[very thick] (Epi)--(verticepi)--(NEpi)--cycle;
\auto[col=red, ang=\angpi]{$(verticepi)+(\angpi:3)$};
```



7 Macchina di Atwood

```
\coordinate (centroCarr) at (0,0);
\tikzdef\Rcarr{1}
\draw[thin] ($(centroCarr)+(-0.9*\Rcarr,0)$)---+(0,-1) node (carrTopL){};
\draw[thin] ($(centroCarr)+(0.9*\Rcarr,0)$)---+(0,-2) node (carrTopR){};
\cassa[col fill=cyan!25, lbl=${\mathbf{m_1}}$]
    {$(carrTopL)+(-0.4*\Rcarr,0)$}{0.4*2*\Rcarr}{-1.2}{0};
\cassa[col fill=orange!25, lbl=${\mathbf{m_2}}$]
    {$(carrTopR)+(-0.3*\Rcarr,0)$}{0.3*2*\Rcarr}{-1}{0};
\carrucola{centroCarr}{\Rcarr};
```

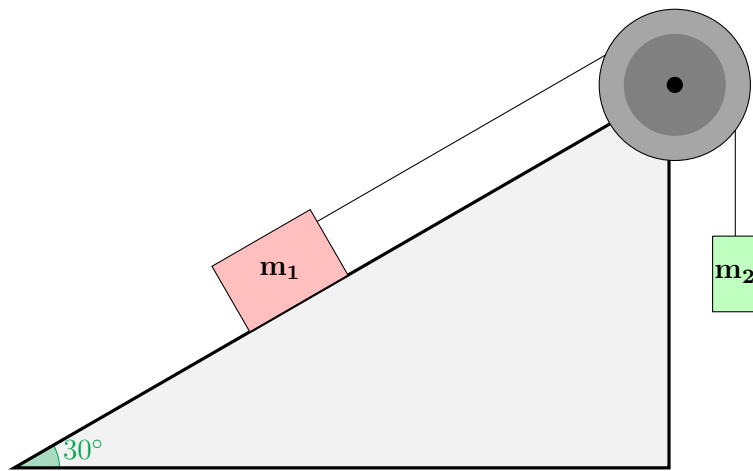


8 Scatola su Piano Inclinato con Carrucola

```

\tikzdef\angpi{30}
\tikzdef\Rcarr{1}
\coordinate (verticepi) at (0,0);
\coordinate (NEpi) at ($(verticepi)+(\angpi:10)$);
\coordinate (Epi) at (NEpi|-verticepi);
\fill[gray!10] (Epi)--(verticepi)--(NEpi)--cycle;
\angolo[col=Green,lbl=$\angpi^\circ$,fill,lbl dist=0.35]{Epi}{verticepi}{NEpi};
\draw[very thick] (Epi)--(verticepi)--(NEpi)--cycle;
\coordinate (centroCarr) at ($(NEpi)+(40:0.1*\Rcarr)$);
\draw[thin] ($(centroCarr)+(0.8*\Rcarr,0)$)---+(0,-2) node (topBoxR){};
\draw[thin] ($(centroCarr)+(90+\angpi:0.8*\Rcarr)$)---+(180+\angpi:5) node (topBoxL){};
\proj{Hpi}{topBoxL}{verticepi}{NEpi};
\cassa[lbl=$\mathbf{m_1}$, col fill=red!25]{Hpi}{-1.5}{1}{\angpi};
\cassa[lbl=$\mathbf{m_2}$, col fill=green!25]{$(topBoxR)+(-0.3,0)$}{0.3*2}{-1}{0};
\carrucola{centroCarr}{\Rcarr};

```

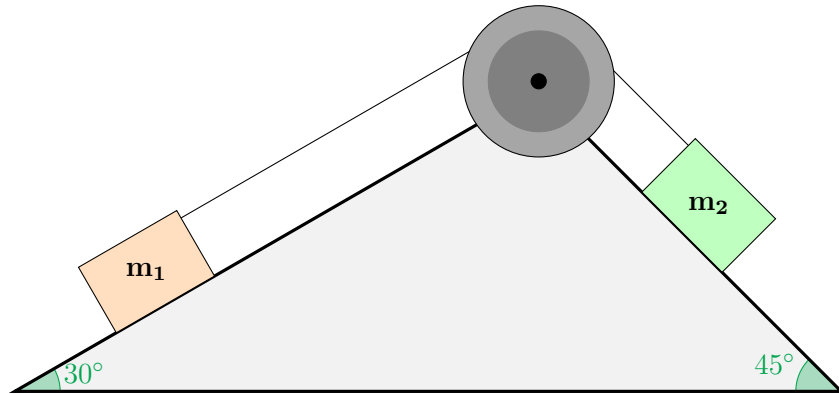


9 Scatole su Piano Inclinato Doppio con Carrucola

```

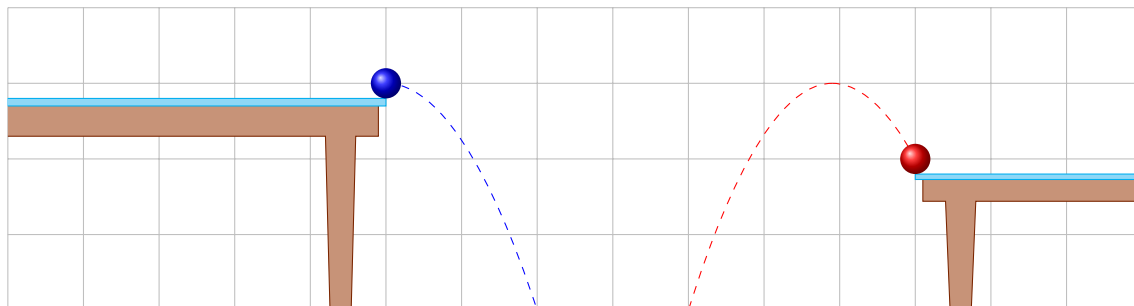
\tikzdef\angpiL{30}
\tikzdef\angpiR{45}
\tikzdef\Rcarr{1}
\coordinate (Npi) at (0,4);
\intrette{Wpi}{Npi}{$(Npi)+(+\angpiL:-1)$}{0,0}{-1,0};
\intrette{Epi}{Npi}{$(Npi)+(-\angpiR:1)$}{0,0}{+1,0};
\fill[gray!10] (Npi)--(Epi)--(Wpi)--cycle;
\angolo[col=Green,lbl=$\angpiL^\circ$,fill,lbl dist=0.35]{Epi}{Wpi}{Npi};
\angolo[col=Green,lbl=$\angpiR^\circ$,fill,lbl dist=0.35]{Npi}{Epi}{Wpi};
\draw[very thick] (Npi)--(Wpi)--(Epi)--cycle;
\coordinate (centroCarr) at ($(Npi)+(0,0.1*\Rcarr)$);
\draw[thin] ($(centroCarr)+(90-\angpiR:0.8*\Rcarr)$)---+(-\angpiR:2) node (topBoxR){};
\draw[thin] ($(centroCarr)+(90+\angpiL:0.8*\Rcarr)$)---+(180+\angpiL:5) node (topBoxL){};
\proj{HpiL}{topBoxL}{Npi}{Wpi};
\proj{HpiR}{topBoxR}{Npi}{Epi};
\cassa[lbl=$\mathbf{m_1}$, col fill=orange!25]{HpiL}{-1.5}{1}{\angpiL};
\cassa[lbl=$\mathbf{m_2}$, col fill=green!25]{HpiR}{1.5}{1}{-\angpiR};
\carrucola{centroCarr}{\Rcarr};

```



10 Lancio Parabolico

```
\tikzdef\R{0.2}
\griglia{0}{15}{0}{4};
\mezzotavolo{0,0}{5}{3-\R};
\draw[dashed,blue] (5,3) parabola (7,0);
\sfera[blue]{5,3}{\R};
\mezzotavolo[mirror]{15,0}{3}{2-\R};
\parabolayVPP[dashed,red]{3}{12,2}{9,0};
\sfera[red]{12,2}{\R};
```

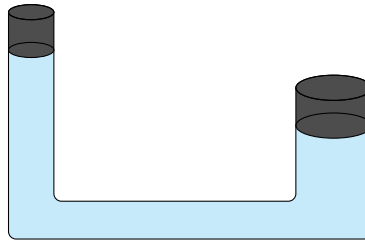


11 Torchio Idraulico

```

\tikzdef\altorchio{0.3} % coefficiente a dell'ellisse a sinistra
\tikzdef\artorchio{0.5} % coefficiente a dell'ellisse a destra
\tikzdef\bltorchio{\altorchio/3} % coefficiente b dell'ellisse a sinistra
\tikzdef\brtorchio{\artorchio/3} % coefficiente b dell'ellisse a destra
\tikzdef\hpistoni{0.5}
\coordinate (topLtuboU) at (-2,3); % centro dell'ellisse in alto a sinistra
\coordinate (topRtuboU) at (+2,2); % centro dell'ellisse in alto a destra
\coordinate (botLtuboU) at ($(topLtuboU)+(0,-\hpistoni)$);
\coordinate (botRtuboU) at ($(topRtuboU)+(0,-\hpistoni)$);
\coordinate (botleftLtuboU) at ($(botLtuboU)+(-\altorchio,0)$);
\coordinate (botrightLtuboU) at ($(botLtuboU)+(+\altorchio,0)$);
\coordinate (botleftRtuboU) at ($(botRtuboU)+(-\artorchio,0)$);
\coordinate (botrightRtuboU) at ($(botRtuboU)+(+\artorchio,0)$);
\fill[cyan!20, rounded corners=1mm] (botleftLtuboU) -- (botleftLtuboU|-0,0) --
    (botrightRtuboU|-0,0) -- (botrightRtuboU) -- (botleftRtuboU) --
    (botleftRtuboU|-0,0.5) -- (botrightLtuboU|-0,0.5) -- (botrightLtuboU) --
    (botleftLtuboU);
\fill[cyan!20] (botleftLtuboU) rectangle ++(2*\altorchio,-0.11)
    (botleftRtuboU) rectangle ++(2*\artorchio,-0.11);
\fill[black!70] (botleftLtuboU) rectangle ($(topLtuboU)+(\altorchio,0)$);
\fill[black!70] (botleftRtuboU) rectangle ($(topRtuboU)+(\artorchio,0)$);
\draw[fill=black!70] (topLtuboU) ellipse (\altorchio cm and \bltorchio cm)
    (botLtuboU) ellipse (\altorchio cm and \bltorchio cm);
\draw[fill=black!70] (topRtuboU) ellipse (\artorchio cm and \brtorchio cm)
    (botRtuboU) ellipse (\artorchio cm and \brtorchio cm);
\draw[rounded corners=1mm] ($(topLtuboU)+(-\altorchio,0)$) --
    (botleftLtuboU|-0,0) -- (botrightRtuboU|-0,0) -- ($(topRtuboU)+(+\artorchio,0)$)
    ($(topLtuboU)+(+\altorchio,0)$) --
    (botrightLtuboU|-0,0.5) -- (botleftRtuboU|-0,0.5) -- ($(topRtuboU)+(-\artorchio,0)$);
\draw (topLtuboU) ellipse (\altorchio cm and \bltorchio cm)
    (topRtuboU) ellipse (\artorchio cm and \brtorchio cm);

```

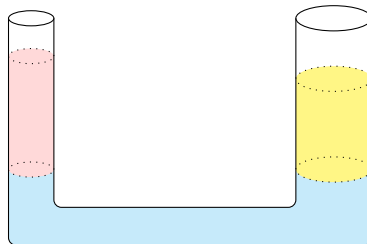


12 Tubo a U

```

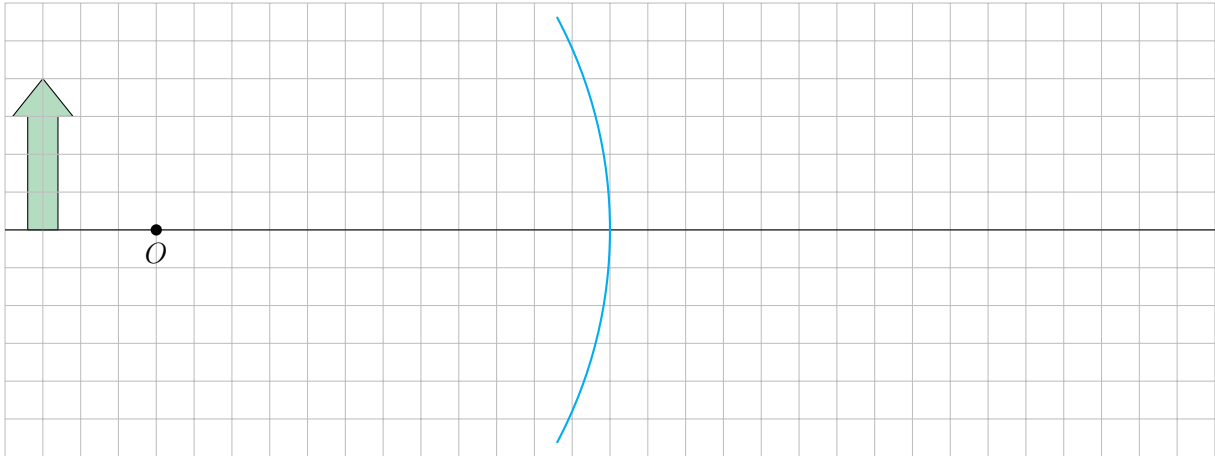
\tikzdef\LTuboU{0.3} % coefficiente a dell'ellisse a sinistra
\tikzdef\RTuboU{0.5} % coefficiente a dell'ellisse a destra
\tikzdef\LTuboU{3} % coefficiente b dell'ellisse a sinistra
\tikzdef\RTuboU{3} % coefficiente b dell'ellisse a destra
\coordinate (topLtuboU) at (-2,3); % centro dell'ellisse in alto a sinistra
\coordinate (topRtuboU) at (+2,3); % centro dell'ellisse in alto a destra
\coordinate (liqtopLtuboU) at (-2,2.5); % centro dell'ellisse in mezzo a sinistra
\coordinate (liqtopRtuboU) at (+2,2.2); % centro dell'ellisse in mezzo a destra
\coordinate (liqbotLtuboU) at (-2,1); % centro dell'ellisse in basso a sinistra
\coordinate (liqbotRtuboU) at (+2,1); % centro dell'ellisse in basso a destra
\coordinate (liqbotleftLtuboU) at ($(liqbotLtuboU)+(-\LTuboU,0)$);
\coordinate (liqbotrightLtuboU) at ($(liqbotLtuboU)+(\LTuboU,0)$);
\coordinate (liqbotleftRtuboU) at ($(liqbotRtuboU)+(-\RTuboU,0)$);
\coordinate (liqbotrightRtuboU) at ($(liqbotRtuboU)+(\RTuboU,0)$);
\fill[cyan!20, rounded corners=1mm] (liqbotleftLtuboU) -- (liqbotleftLtuboU|-0,0) --
    (liqbotrightRtuboU|-0,0) -- (liqbotrightRtuboU) -- (liqbotleftRtuboU) --
    (liqbotleftRtuboU|-0,0.5) -- (liqbotrightLtuboU|-0,0.5) --
    (liqbotrightLtuboU) -- (liqbotleftLtuboU);
\fill[cyan!20] (liqbotleftLtuboU) rectangle ++(2*\LTuboU,-0.11)
    (liqbotrightRtuboU) rectangle ++(2*\RTuboU,-0.11);
\fill[pink!60] (liqbotleftLtuboU) rectangle ($(liqtopLtuboU)+(\LTuboU,0)$);
\fill[yellow!60] (liqbotleftRtuboU) rectangle ($(liqtopRtuboU)+(\RTuboU,0)$);
\draw[dotted, fill=pink!60] (liqtopLtuboU) ellipse (\LTuboU cm and \LTuboU cm)
    (liqbotLtuboU) ellipse (\LTuboU cm and \LTuboU cm);
\draw[dotted, fill=yellow!60] (liqtopRtuboU) ellipse (\RTuboU cm and \RTuboU cm)
    (liqbotRtuboU) ellipse (\RTuboU cm and \RTuboU cm);
\draw[rounded corners=1mm] ($(topLtuboU)+(-\LTuboU,0)$) -- (liqbotleftLtuboU|-0,0) --
    (liqbotrightRtuboU|-0,0) -- ($(topRtuboU)+(\RTuboU,0)$)
    ($(topLtuboU)+(\LTuboU,0)$) -- (liqbotrightLtuboU|-0,0.5) --
    (liqbotleftRtuboU|-0,0.5) -- ($(topRtuboU)+(-\RTuboU,0)$);
\draw (topLtuboU) ellipse (\LTuboU cm and \LTuboU cm)
    (topRtuboU) ellipse (\RTuboU cm and \RTuboU cm);

```

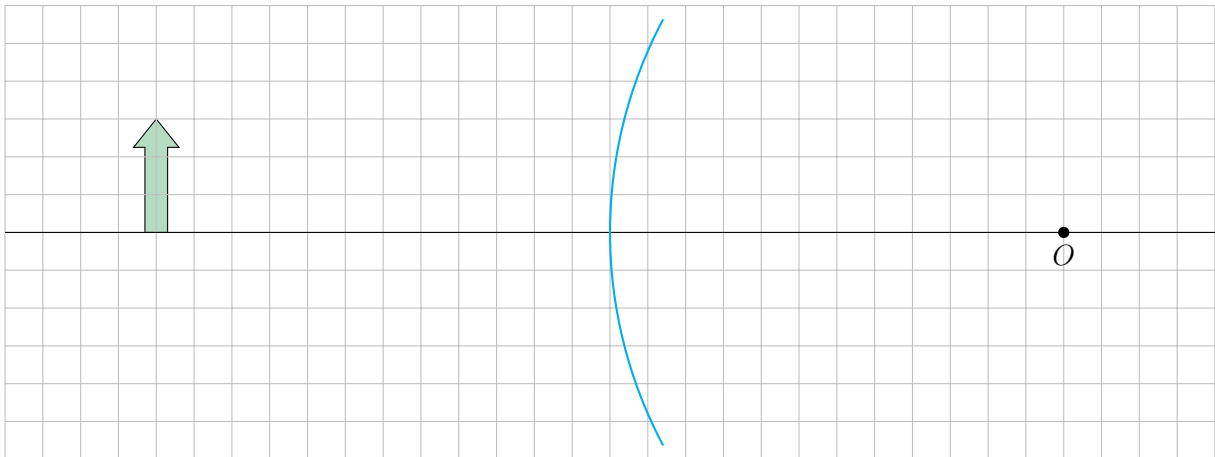


13 Specchi Sferici

```
\tikzdef\h{2} % l'altezza della freccia
\tikzdef\R{6} % il raggio dello specchio
\tikzdef\angspecchio{28} % fino a che angolo dobbiamo disegnare lo specchio
\draw[fill=Green!30] ($(-7.5,0)+(-0.1*\h,0)$) ---- (0,0.75*\h) ---- (-0.1*\h,0) ----
(0.2*\h,0.25*\h) ---- (0.2*\h,-0.25*\h) ---- (-0.1*\h,0) ---- (0,-0.75*\h) ----
(-0.2*\h,0);
\griglia[step=0.5]{-8}{8}{-3}{3};
\draw[thin] (-8,0)--(8,0);
\pntl{0}{-90}{-\R,0};
\arcocirc[thick,cyan]{0}{$(0)+(-\angspecchio:\R)$}{$(0)+(\angspecchio:\R)$};
```



```
\tikzdef\h{1.5} % l'altezza della freccia
\tikzdef\R{6} % il raggio dello specchio
\tikzdef\angspecchio{28} % fino a che angolo dobbiamo disegnare lo specchio
\draw[fill=Green!30] ($(-6,0)+(-0.1*\h,0)$) ---- (0,0.75*\h) ---- (-0.1*\h,0) ----
(0.2*\h,0.25*\h) ---- (0.2*\h,-0.25*\h) ---- (-0.1*\h,0) ---- (0,-0.75*\h) ----
(-0.2*\h,0);
\griglia[step=0.5]{-8}{8}{-3}{3};
\draw[thin] (-8,0)--(8,0);
\pntl{0}{-90}{\R,0};
\arcocirc[thick,cyan]{0}{$(0)+(180-\angspecchio:\R)$}{$(0)+(180+\angspecchio:\R)$};
```

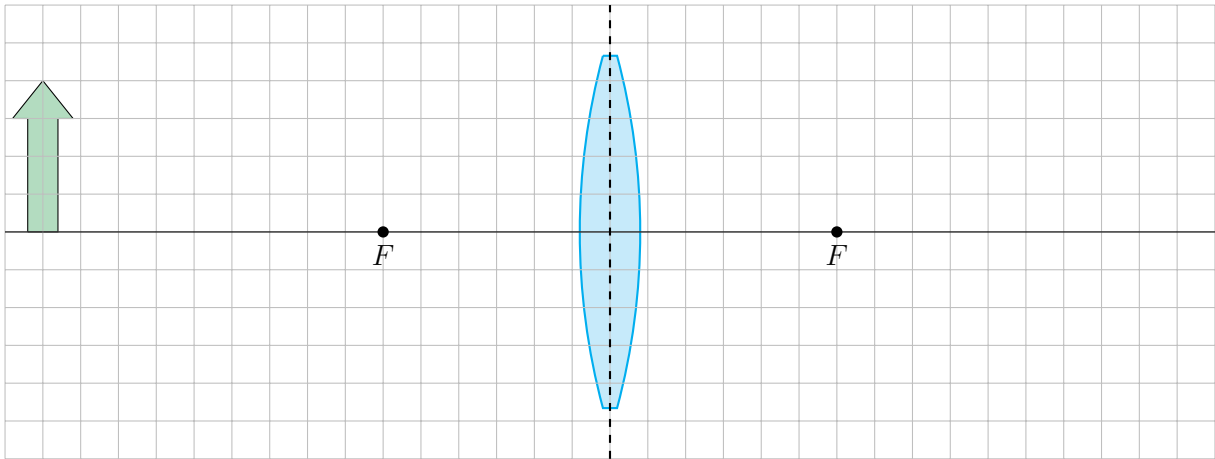


14 Lente Sferica Convergente

```

\tikzdef\h{2} % l'altezza della freccia
\tikzdef\f{3} % dove posizionare i fuochi (non serve che sia davvero in linea con R)
\tikzdef\R{9} % il raggio della lente
\tikzdef\w{0.8} % lo spessore della lente (al centro)
\tikzdef\anglente{15} % fino a che angolo dobbiamo disegnare la lente
\draw[thick,cyan,fill=cyan!20] ($(\R-0.5*\w,0)+(180-\anglente:\R)$)
    arc (180-\anglente:180+\anglente:\R) -- ($(-\R+0.5*\w,0)+(-\anglente:\R)$)
    arc (-\anglente:\anglente:\R) -- ($(\R-0.5*\w,0)+(180-\anglente:\R)$);
\draw[fill=Green!30] ($(-7.5,0)+(-0.1*\h,0)$) ---+ (0,0.75*\h) ---+ (-0.1*\h,0) ---+
    (0.2*\h,0.25*\h) ---+ (0.2*\h,-0.25*\h) ---+ (-0.1*\h,0) ---+ (0,-0.75*\h) ---+
    (-0.2*\h,0);
\griglia[step=0.5]{-8}{8}{-3}{3};
\draw[thick,dashed] (0,-3)--(0,3);
\draw[thin] (-8,0)--(8,0);
\pntl{F}{-90}{-\f,0}; % in realtà i fuochi non dovrebbero essere qui
\pntl{F}{-90}{+\f,0};

```



15 Lente Sferica Divergente

```
\tikzdef\h{1.5} % l'altezza della freccia
\tikzdef\f{3} % dove posizionare i fuochi (non serve che sia davvero in linea con R)
\tikzdef\R{9} % il raggio della lente
\tikzdef\w{0.3} % lo spessore della lente (al centro)
\tikzdef\anglente{15} % fino a che angolo dobbiamo disegnare la lente
\draw[thick,cyan,fill=cyan!20] ($(\R+0.5*\w,0)+(180-\anglente:\R)$)
  arc (180-\anglente:180+\anglente:\R) -- ($(-\R-0.5*\w,0)+(-\anglente:\R)$)
  arc (-\anglente:\anglente:\R) -- ($(\R+0.5*\w,0)+(180-\anglente:\R)$);
\draw[fill=Green!30] ($(-6,0)+(-0.1*\h,0)$) ---- (0,0.75*\h) ---- (-0.1*\h,0) ----
  (0.2*\h,0.25*\h) ---- (0.2*\h,-0.25*\h) ---- (-0.1*\h,0) ---- (0,-0.75*\h) ----
  (-0.2*\h,0);
\griglia[step=0.5]{-8}{8}{-3}{3};
\draw[thick,dashed] (0,-3)--(0,3);
\draw[thin] (-8,0)--(8,0);
\ptl{F}{-90}{-\f,0}; % in realtà i fuochi non dovrebbero essere qui
\ptl{F}{-90}{+\f,0};
```

