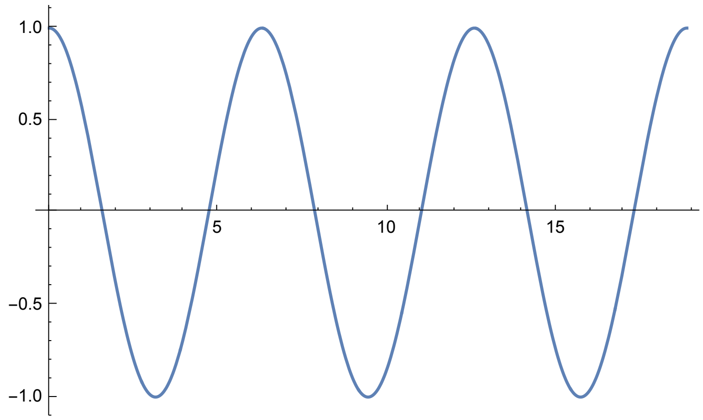
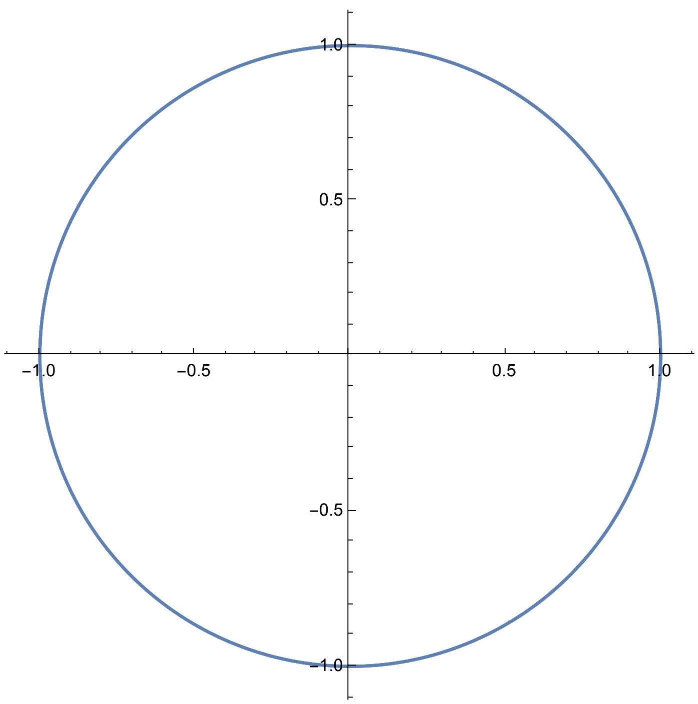
In[1]:= `Plot[Cos[t], {t, 0, 6 Pi}]`

Out[1]=



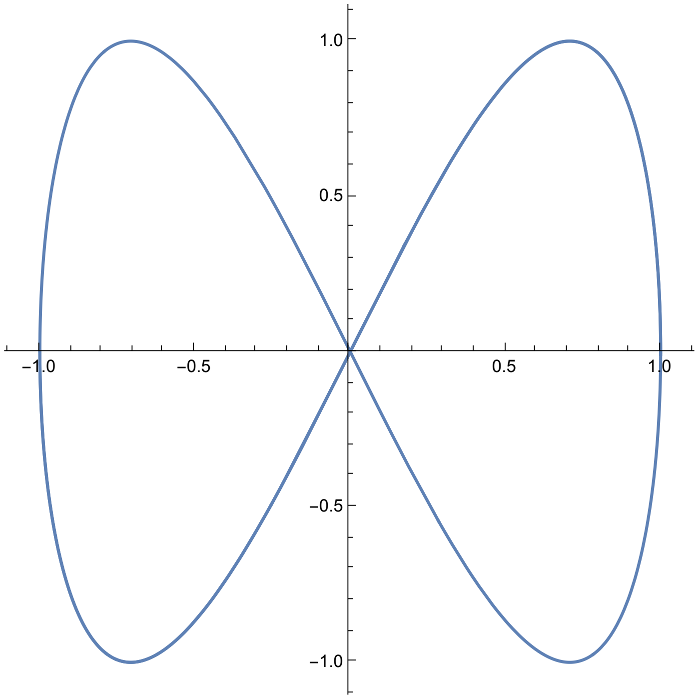
In[2]:= `ParametricPlot[{Cos[t], Sin[t]}, {t, 0, 6 Pi}]`

Out[2]=



In[3]:= `ParametricPlot[{Cos[t / 2], Sin[t]}, {t, 0, 6 Pi}]`

Out[3]=



In[4]:= `{x, y}`

Out[4]= `{x, y}`

In[5]:= `MatrixForm[{x, y}]`

Out[5]//MatrixForm=

$$\begin{pmatrix} x \\ y \end{pmatrix}$$

In[6]:= `{{Cos[phi], -Sin[phi]}, {Sin[phi], Cos[phi]}}`

Out[6]= `{{Cos[phi], -Sin[phi]}, {Sin[phi], Cos[phi]}}`

In[7]:= `MatrixForm[{{Cos[phi], -Sin[phi]}, {Sin[phi], Cos[phi]}}]`

Out[7]//MatrixForm=

$$\begin{pmatrix} \text{Cos[phi]} & -\text{Sin[phi]} \\ \text{Sin[phi]} & \text{Cos[phi]} \end{pmatrix}$$

In[8]:= `{{Cos[phi], -Sin[phi]}, {Sin[phi], Cos[phi]}} . {x, y}`

Out[8]= `{x Cos[phi] - y Sin[phi], y Cos[phi] + x Sin[phi]}`

In[9]:= `MatrixForm[{x Cos[phi] - y Sin[phi], y Cos[phi] + x Sin[phi]}]`

Out[9]//MatrixForm=

$$\begin{pmatrix} x\,\text{Cos[phi]} - y\,\text{Sin[phi]} \\ y\,\text{Cos[phi]} + x\,\text{Sin[phi]} \end{pmatrix}$$

In[12]:= `rot[phi_] := {{Cos[phi], -Sin[phi]}, {Sin[phi], Cos[phi]}}`

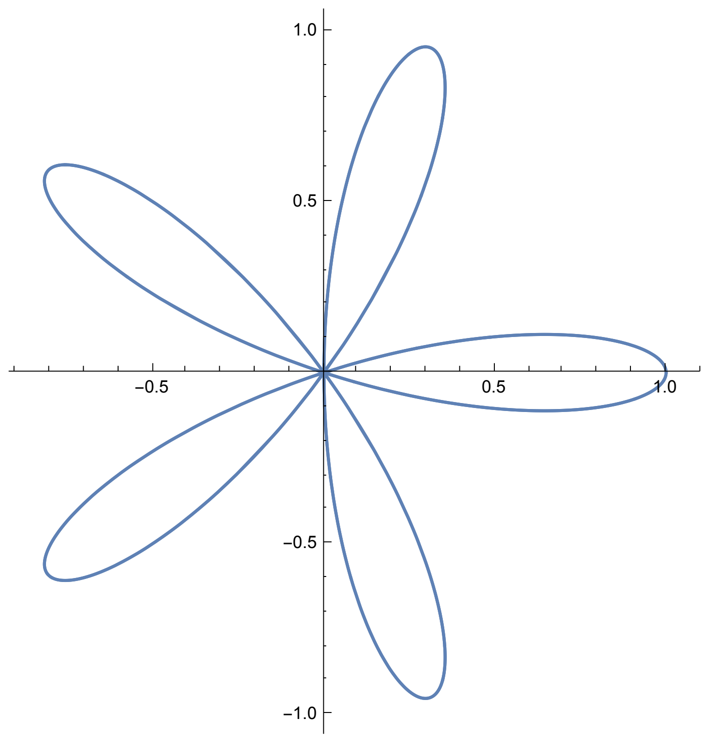
In[13]:=
```
MatrixForm[rot[45 Degree]]
```

Out[13]//MatrixForm=

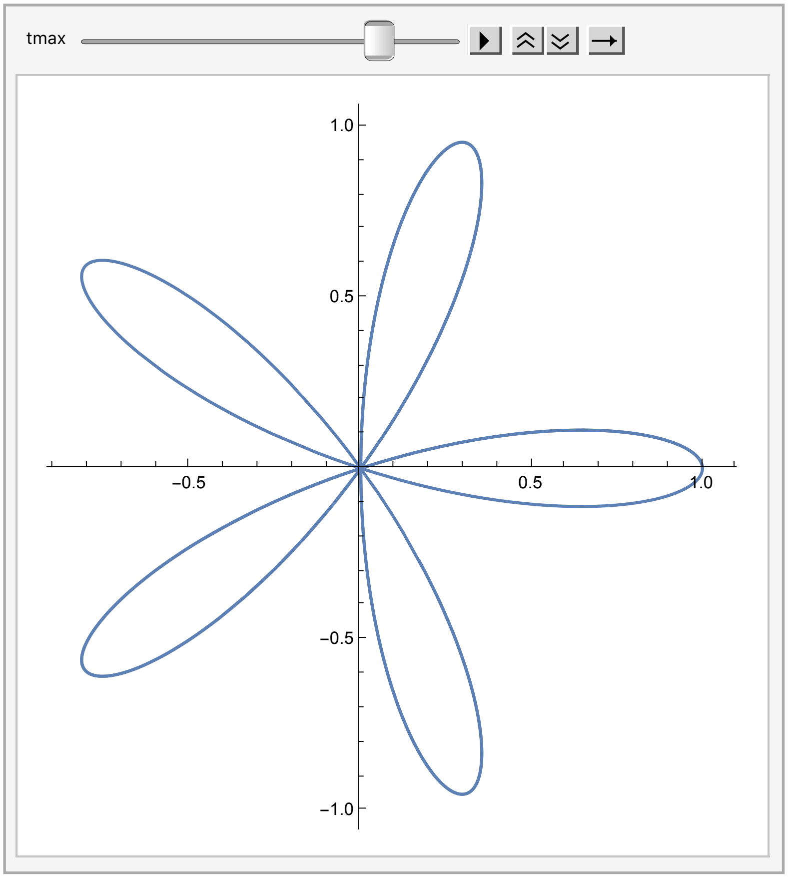
$$\begin{pmatrix} \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \end{pmatrix}$$

In[14]:=
```
omegaPendulum = 1.0;
omegaEarth = 0.2;
xy[t_] := {Cos[omegaPendulum * t], 0};
xyRot[t_] := rot[omegaEarth * t] . xy[t];
ParametricPlot[xyRot[t], {t, 0, 10 Pi}]
```

Out[18]=



```
(* If this shows a blank graph, you need to do
   "Evaluation" → "Evaluate Notebook" so that the
   plot can use the definition of xyRot, etc. *)
Animate[ParametricPlot[xyRot[t], {t, 0, tmax}], {tmax, 0, 10 Pi}]
```



```
(* This adds a small circle to the plot, showing (x,y) at tmax *)
Animate[
 Show[
  ParametricPlot[xyRot[t], {t, 0, tmax}],
  Graphics[Circle[xyRot[tmax], 0.05]]
 ],
 {tmax, 0, 40 Pi},
 AnimationRate → 0.03
]
```