Circular Rotation

(Local) In[30]:=
```
Clear["Global`*"];
```

(Local) In[31]:=
```
val = {r Æ 10, j0 Æ 0, w Æ 2 Pi / 10};
```

■ Circle coordinates from {r,φ} to {x,y} as function of t

(Local) In[32]:=
```
coord[t_] = {r Cos[w t + j0], r Sin[w t + j0]}
```

(Local) Out[32]=
```
{r Cos[j0 + t w], r Sin[j0 + t w]}
```

■ Calculate the velocity and acceleration vectors

(Local) In[33]:=
```
veloc[t_] = D[coord[t], t]
accel[t_] = D[veloc[t], t]
```

(Local) Out[33]=
```
{-r w Sin[j0 + t w], r w Cos[j0 + t w]}
```

(Local) Out[34]=
```
{-r w^2 Cos[j0 + t w], -r w^2 Sin[j0 + t w]}
```

■ Define a plot as a function of t and tabulate it for ten t values

(Local) In[35]:=
```
Clear[plot];
plot1[t_] := ListPlot[{coord[t] /. val},
  PlotStyle Æ {PointSize[0.03], RGBColor[0, 0, 1]}, GridLines Æ Automatic,
  Frame Æ True, PlotRange Æ {{-10, 10}, {-10, 10}}, AspectRatio Æ Automatic]
```

(Local) In[37]:=
```
plotarray = Table[plot1[t], {t, 0, 10, 1}];
```

■ Combine all the t plots into a single plot and add curve

(Local) In[38]:=
```
points = Show[plotarray];
```

(Local) In[39]:=
```
curve = ParametricPlot[Evaluate[{coord[t] /. val}],
   {t, 0, 10}, PlotStyle Æ {RGBColor[1, 0, 0]}, AspectRatio Æ Automatic];
```

(Local) In[40]:=

```
Show[points, curve];
```