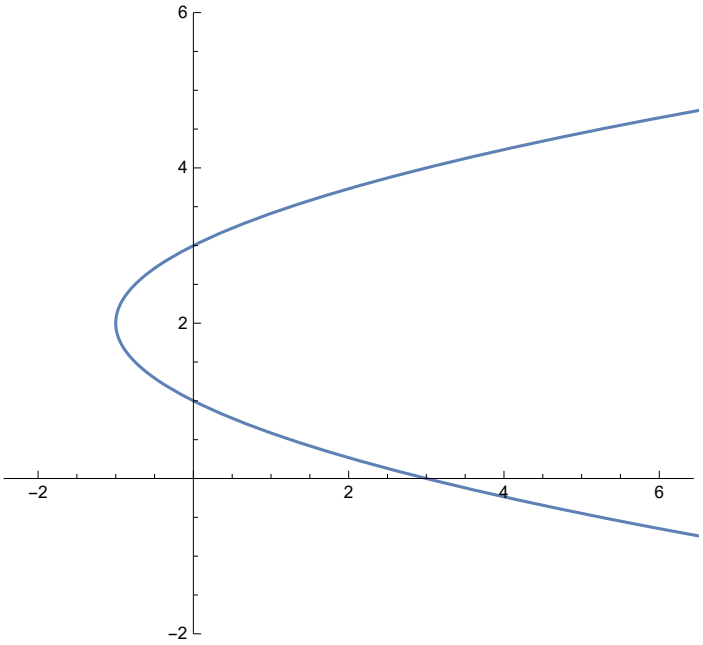
Lab 11

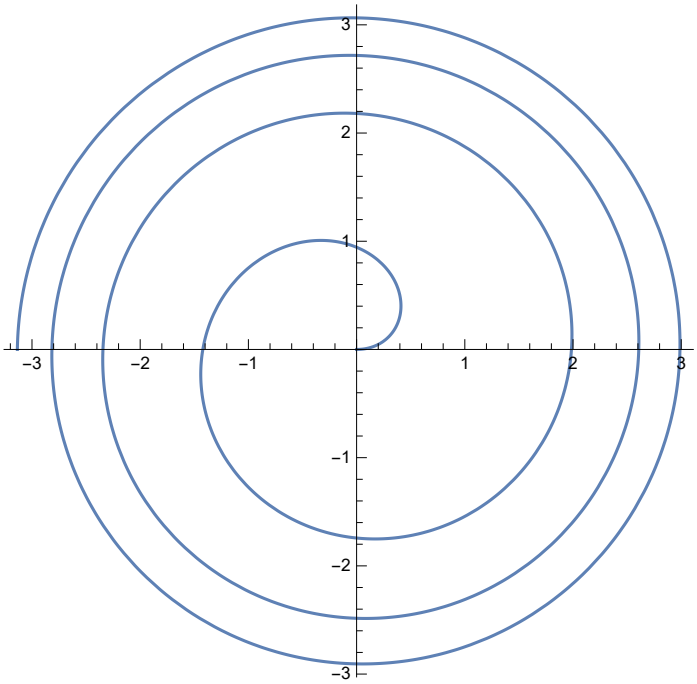
In[1]:=
```
ParametricPlot[{t^2 - 2 t, t + 1}, {t, -2, 4}, PlotRange → {-2, 6}]
```

Out[1]=



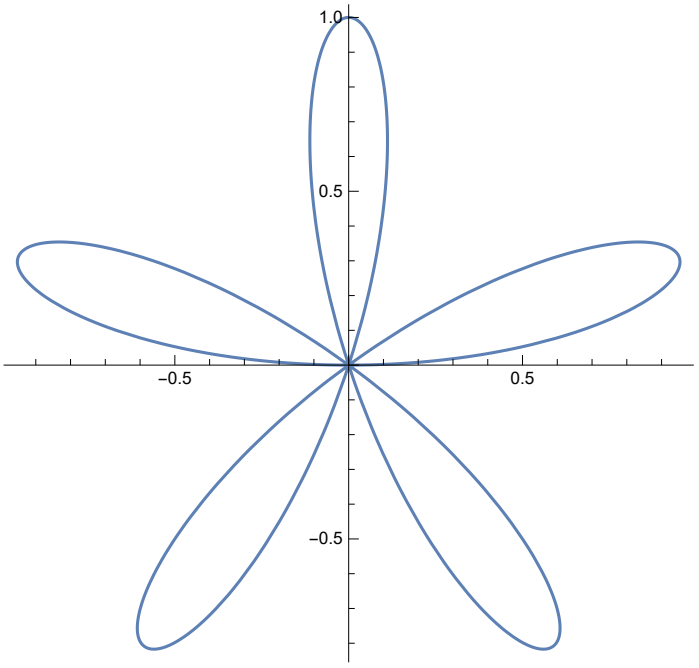
In[16]:=
```
PolarPlot[Log[t + 1], {t, 0, 7 Pi}]
```

Out[16]=



In[14]:=
```
PolarPlot[Sin[5 t], {t, 0, Pi}]
```

Out[14]=



Question 1

In[2]:=
```
x[t_] = 4 Cos[t] - Cos[16 t]
```

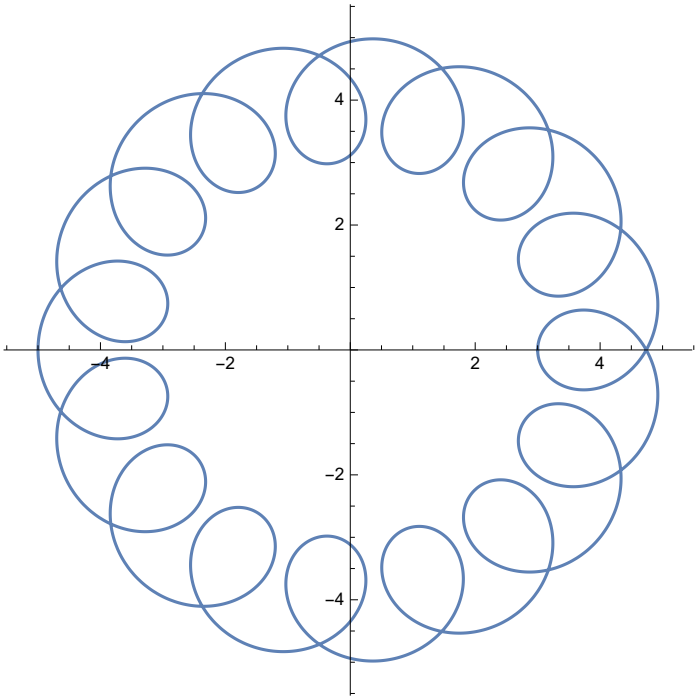
Out[2]=
```
4 Cos[t] - Cos[16 t]
```

In[3]:=
```
y[t_] = 4 Sin[t] - Sin[16 t]
```

Out[3]=
```
4 Sin[t] - Sin[16 t]
```

In[4]:=
```
ParametricPlot[{x[t], y[t]}, {t, 0, 2 Pi}, PlotRange → Automatic]
```

Out[4]=



Question 2

In[5]:=
```
x2[t_] = t - Sin[t]
```

Out[5]=
```
t - Sin[t]
```

In[6]:=
```
y2[t_] = 1 - Cos[t]
```

Out[6]=
```
1 - Cos[t]
```

In[7]:=
```
x2'[t]
```

Out[7]=
```
1 - Cos[t]
```

In[8]:=
```
y2'[t]
```

Out[8]=
```
Sin[t]
```

In[11]:=
```
y2'[Pi/4]/x2'[Pi/4]
```

Out[11]=
$$\frac{1}{\sqrt{2}\left(1-\frac{1}{\sqrt{2}}\right)}$$

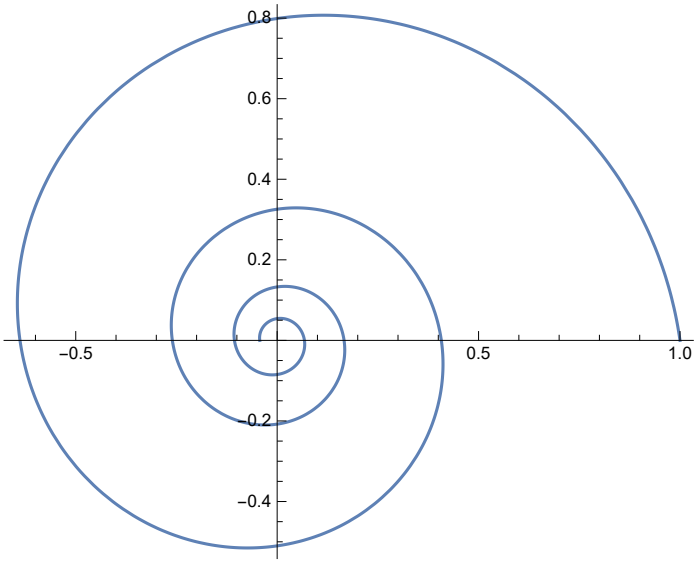
In[12]:=
$$N\left[\frac{1}{\sqrt{2}\left(1-\frac{1}{\sqrt{2}}\right)}\right]$$

Out[12]=
```
2.41421
```

Question 3

In[13]:=
```
PolarPlot[Exp[-t/7], {t, 0, 7 Pi}]
```

Out[13]=



Question 4

In[15]:=
```
PolarPlot[t * (2 - t) * (3 - t), {t, 0, Pi}]
```

Out[15]=