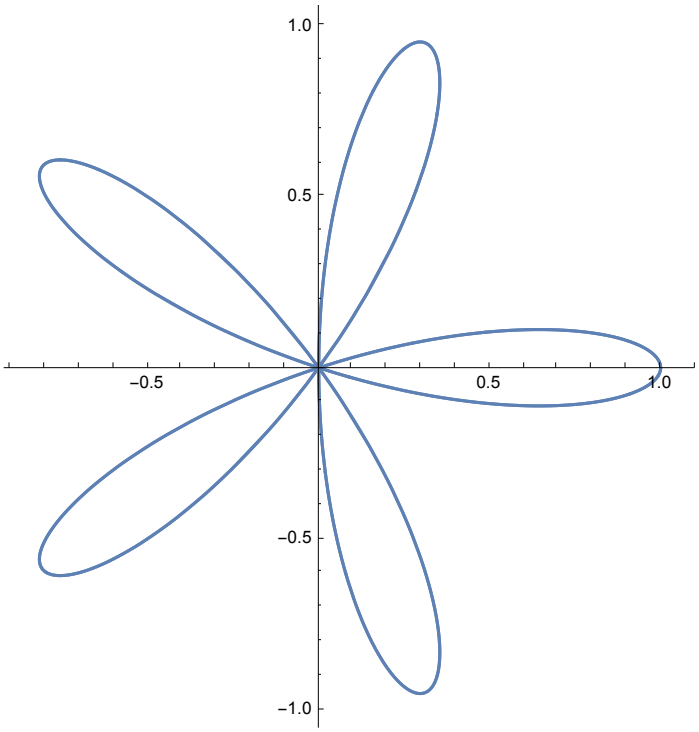
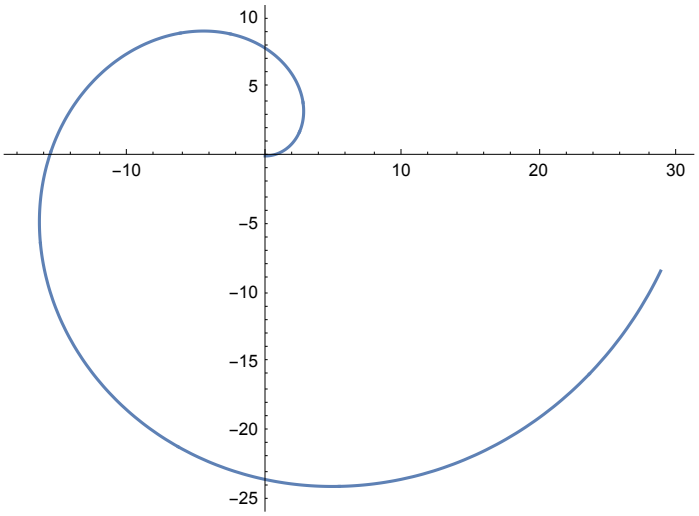
In[114]:=
```
rot[phi_] := {{Cos[phi], -Sin[phi]}, {Sin[phi], Cos[phi]}};
omegaPendulum = 1.0;
omegaEarth = 0.2;
xy[t_] := {Cos[omegaPendulum * t], 0};
xyRot[t_] := rot[omegaEarth * t] . xy[t];
ParametricPlot[xyRot[t], {t, 0, 10 Pi}]
```

Out[119]=



In[136]:=
```
(* This is more relevant to HW problem 5 *)
omega = 0.2;
x0 = 0;
v = 1;
tmax = 30;
ParametricPlot[rot[omega * t] . {x0 + v * t, 0}, {t, 0, tmax}]
```

Out[140]=



In[168]:=
```
ClearAll["Global`*"];
g = 9.8; r = 5.0; omegasq = Sqrt[g / r]; phi0 = 20 * Degree;
soln = NDSolveValue[
    {phi''[t] == -omegasq * Sin[phi[t]],
     phi'[0] == 0, phi[0] == phi0}, phi[t], {t, 0, 10}];
Show[
 {Plot[soln, {t, 0, 10}],
  Plot[phi0 * Cos[Sqrt[omegasq] * t], {t, 0, 10}]}]
```

Out[171]=