In[1]:=
```
osc[m_, c_, k_, u10_, u20_] :=
 {u1'[t] == u2[t], u2'[t] == -(k / m) u1[t] - (c / m) u2[t], u1[0] == u10, u2[0] == u20}
```

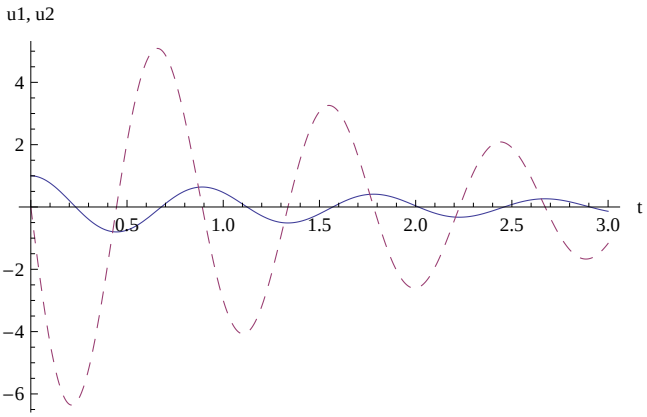
In[2]:=
```
ans[m_, c_, k_, u10_, u20_, tf_] :=
 {u1[t], u2[t]} /. Flatten[NDSolve[osc[m, c, k, u10, u20], {u1[t], u2[t]}, {t, 0, tf}]]
```

In[3]:=
```
sol1 = ans[10, 10, 500, 1, 0, 3]
```

Out[3]=
```
{InterpolatingFunction[{{0., 3.}}, <>][t], InterpolatingFunction[{{0., 3.}}, <>][t]}
```

In[4]:=
```
oscgraph1 = Plot[{First[sol1], Last[sol1]}, {t, 0, 3},
  AxesLabel → {"t", "u1, u2"}, PlotStyle → {Dashing[{}], Dashing[{0.02, 0.02}]}]
```

Out[4]=



In[5]:=
```
xsol1[t_] := First[sol1]
```

In[6]:=
```
ysol1[t_] := Last[sol1]
```

In[7]:=
```
oscgraph2 = ParametricPlot[{xsol1[t], ysol1[t]},
  {t, 0, 3}, PlotRange → {{-2, 2}, {-7, 7}}, AxesLabel → {"u1", "u2"}]
```

Out[7]=