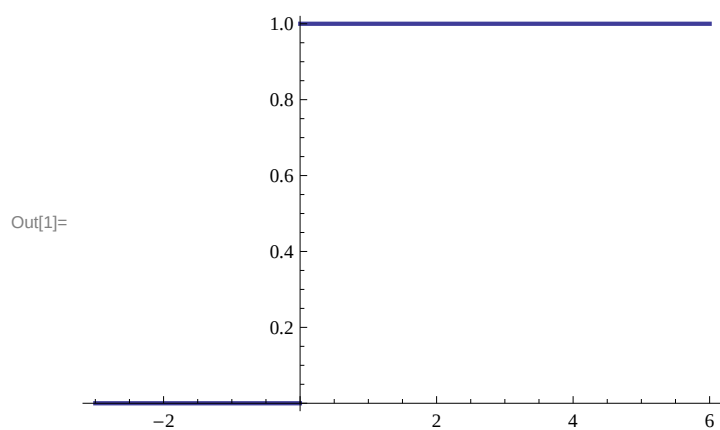
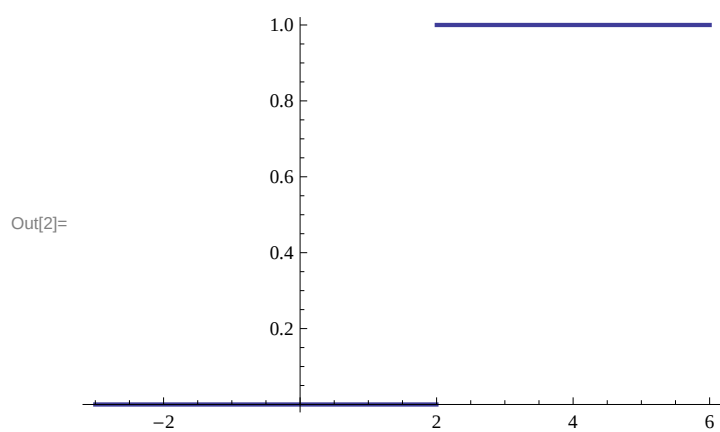


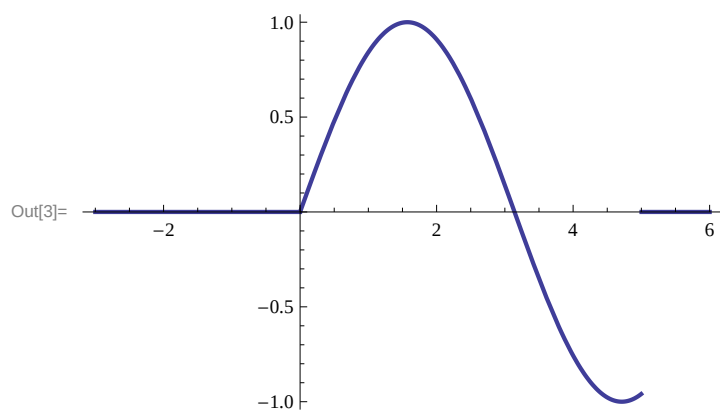
In[1]:= **Plot[UnitStep[x], {x, -3, 6}, PlotStyle → Thick]**



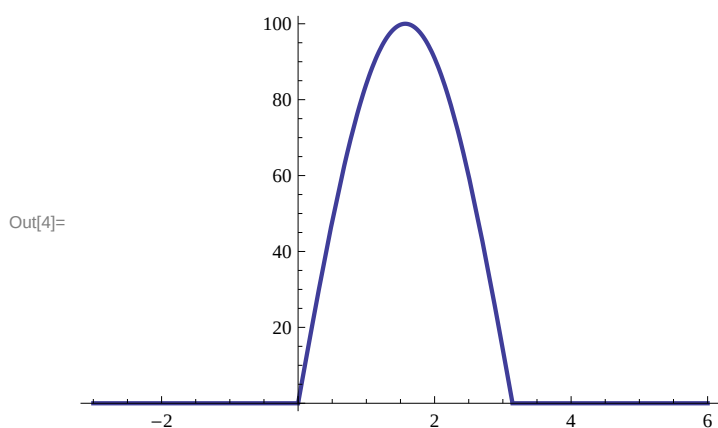
In[2]:= **Plot[UnitStep[x - 2], {x, -3, 6}, PlotStyle → Thick]**



In[3]:= **Plot[(UnitStep[x] - UnitStep[x - 5]) * Sin[x], {x, -3, 6}, PlotStyle → Thick]**

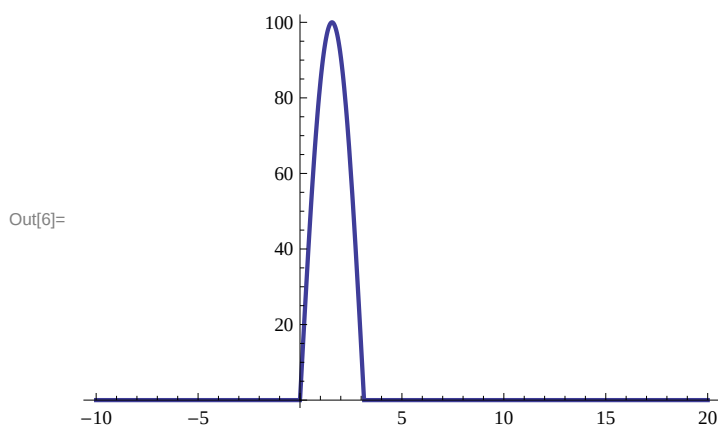


```
In[4]:= Plot[100 * (UnitStep[x] - UnitStep[x -  $\pi$ ]) * Sin[x], {x, -3, 6}, PlotStyle -> Thick]
```



```
In[5]:= f[x_] := 100 * (UnitStep[x] - UnitStep[x -  $\pi$ ]) * Sin[x]
```

```
In[6]:= Plot[f[t], {t, -10, 20}, PlotStyle -> Thick]
```

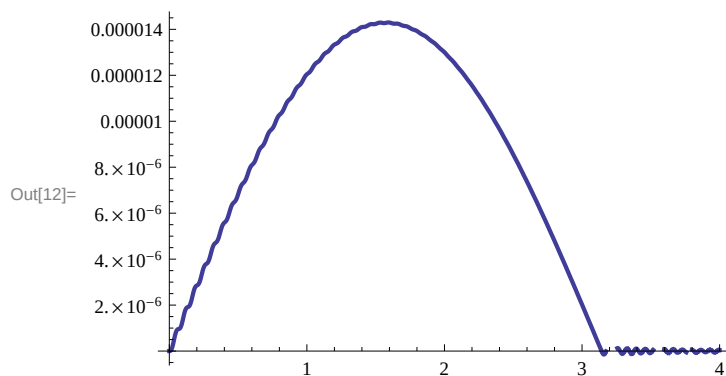


```
In[7]:= solution = DSolve[{m * q'[t] + c * q'[t] + k * q[t] == f[t], q[0] == 0, q'[0] == 0}, q[t], t];
```

```
In[8]:= q1[t_] = solution[[1, 1, 2]];
```

```
In[9]:= m = 800.;  
k = 7 000 000;  
c = 2300;
```

```
In[12]:= Plot[q1[t], {t, 0, 4.0}, PlotPoints -> 200, PlotRange -> All, PlotStyle -> Thick]
```



```
In[13]:= FindMaximum[q1[t], {t, 1.5}]
```

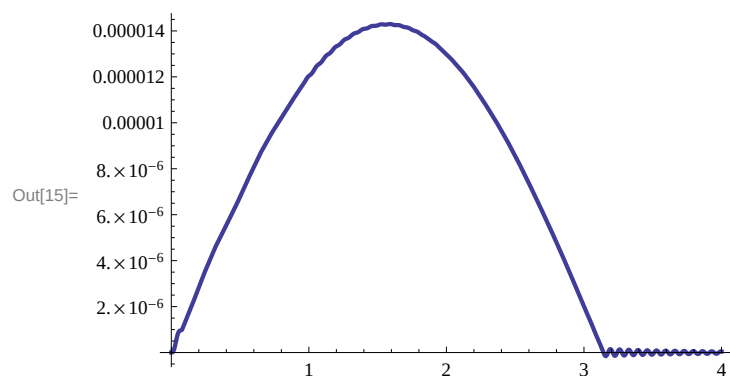
```
Out[13]= {0.0000142925, {t -> 1.5323}}
```

```
In[14]:= Nsolution = NDSolve[{m * q''[t] + c * q'[t] + k * q[t] == f[t], q[0] == 0, q'[0] == 0},  

q[t], {t, 0, 20}, MaxStepSize -> 0.01]
```

```
Out[14]:= {{q[t] -> InterpolatingFunction[{{0., 20.}}, <>][t]}}
```

```
In[15]:= Plot[Evaluate[q[t] /. Nsolution], {t, 0, 4}, PlotRange -> All, PlotStyle -> Thick]
```



```
In[16]:= FindMaximum[Evaluate[q[t] /. Nsolution], {t, 1.5}]
```

```
Out[16]:= {0.0000142875, {t -> 1.52936}}
```