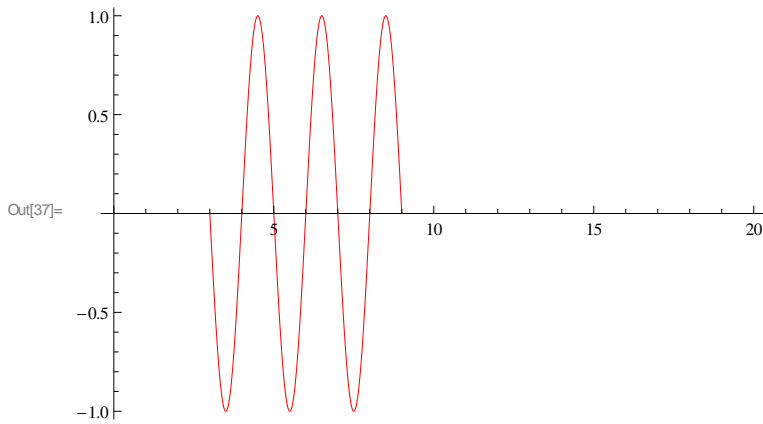


### ■ Forcing function (non-homogeneous term)

```
In[1]:= f[t_] = Fo * Sin[π t] HeavisideTheta[t - 3] HeavisideTheta[9 - t];
```

```
In[37]:= p1 = Plot[f[t] /. Fo -> 1, {t, 0, 20}, PlotStyle -> RGBColor[1, 0, 0]]
```

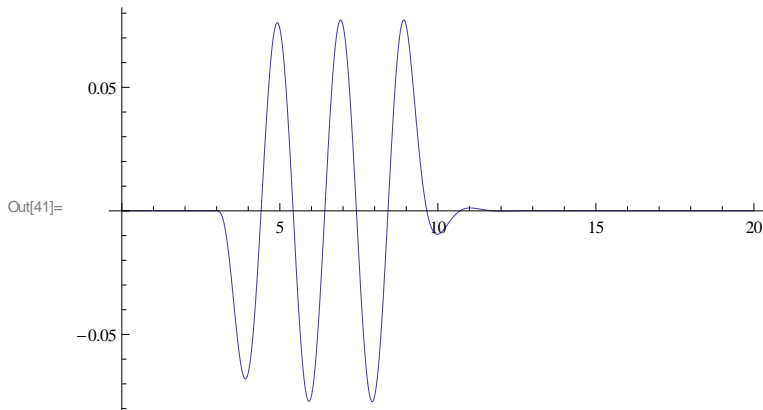


```
In[7]:= x[t_] = Integrate[Fo * Sin[π tp] * HeavisideTheta[t - tp] / (m ω1) *  
Exp[-β (t - tp)] * Sin[ω1 (t - tp)], {tp, 3, 9}];
```

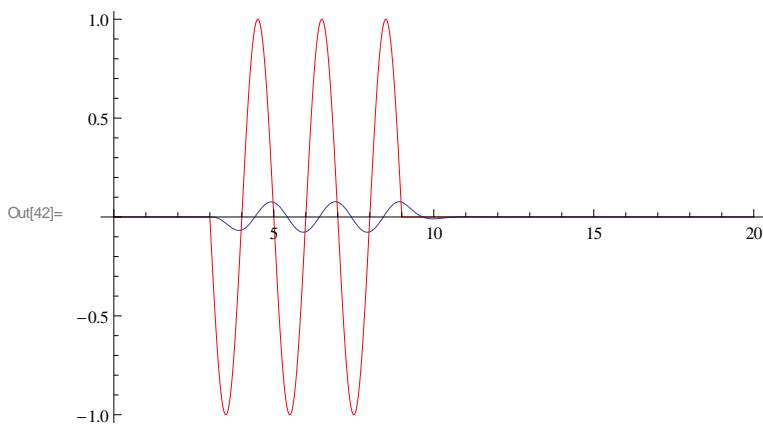
### ■ Response (heavy damping)

```
In[40]:= r = {Fo -> 1, m -> 1, ω1 -> 3, β -> 2};
```

```
In[41]:= p2 = Plot[x[t] /. r, {t, 0, 20}, PlotRange -> All]
```



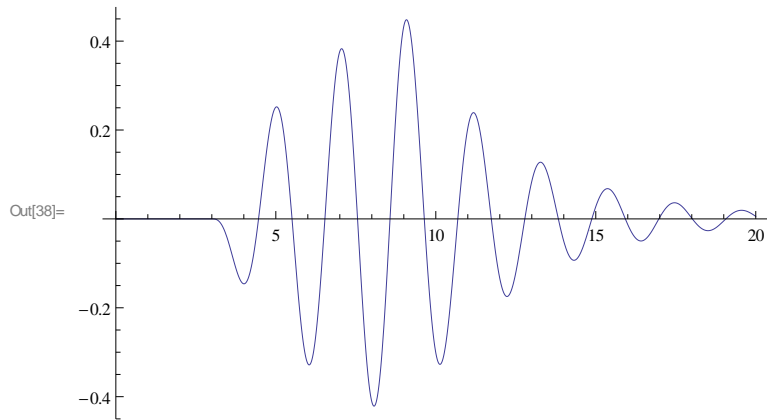
```
In[42]:= Show[p1, p2]
```



### ■ Response (light damping)

```
In[33]:= r = {Fo -> 1, m -> 1, ω1 -> 3, β -> 0.3};
```

```
In[38]:= p2 = Plot[x[t] /. r, {t, 0, 20}, PlotRange -> All]
```



```
In[39]:= Show[p1, p2]
```

