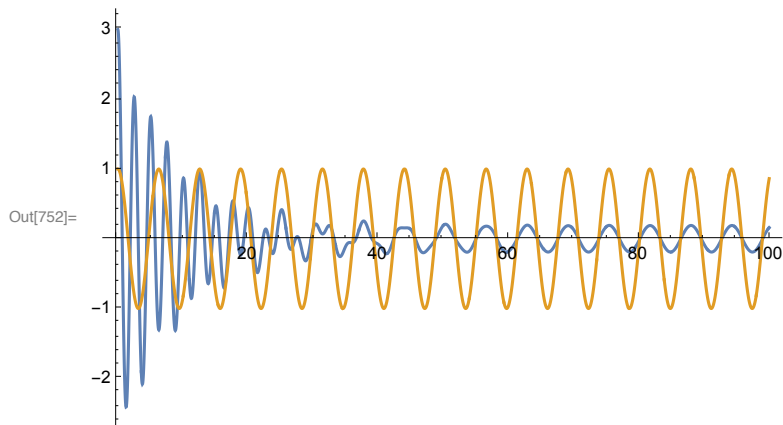


In[749]:=

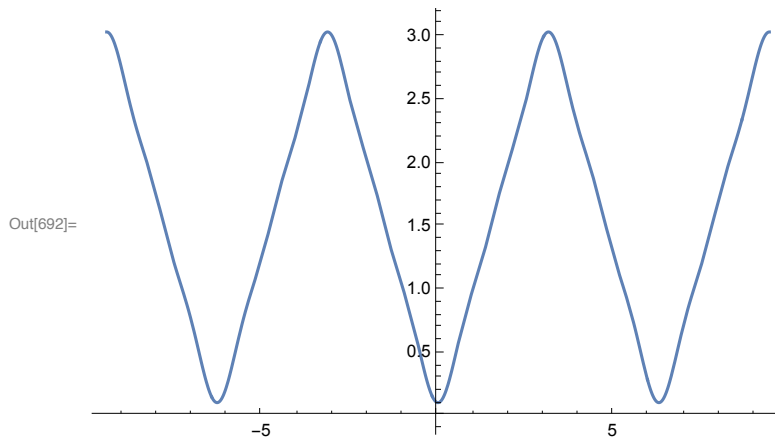
```
ClearAll["Global`*"];
omega0 = 2.5; omega = 1.0; beta = 0.1; fampl = 1.0;
fphi = 0.0; x0 = 3.0; v0 = 0.0; tmax = 100.0;
soln =
  NDSolveValue[{x''[t] + 2 beta x'[t] + omega0^2 x[t] == fampl Cos[omega t + fphi],
    x'[0] == v0, x[0] == x0}, x[t], {t, 0, tmax}];
Plot[{soln, fampl Cos[omega t + fphi]}, {t, 0, tmax}, PlotRange -> All]
```



In[712]:= **FourierSeries**[Abs[t], t, 5]

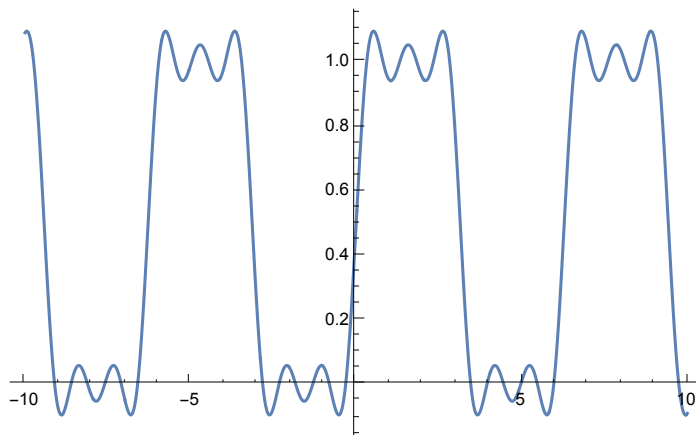
Out[712]=
$$-\frac{2 e^{-i t}}{\pi} - \frac{2 e^{i t}}{\pi} - \frac{2 e^{-3 i t}}{9 \pi} - \frac{2 e^{3 i t}}{9 \pi} - \frac{2 e^{-5 i t}}{25 \pi} - \frac{2 e^{5 i t}}{25 \pi} + \frac{\pi}{2}$$

In[692]:= **Plot**[% , {t, -3 Pi, 3 Pi}]



```
In[699]:= f[t_] := 1/2 + (2/Pi) (Sin[t] + Sin[3 t] / 3 + Sin[5 t] / 5);
Plot[f[t], {t, -10, 10}]
```

Out[700]=



```
In[702]:= Integrate[t Exp[-I m w t], t]
```

Out[702]=
$$\frac{e^{-i m t w} (1 + i m t w)}{m^2 w^2}$$

```
In[703]:= f[t_] := 1/2 - (4/Pi^2) (Cos[t] + Cos[3 t] / 9 + Cos[5 t] / 25);
Plot[f[t], {t, -10, 10}]
```

Out[704]=

