File Edit View Insert Format Table Drawing Plot Spreadsheet Tools Window Help

$$f := x \rightarrow 2\sin(2\pi x) + 5\sin(12\pi x) + 9\sin(22\pi x) \tag{1}$$

```
> Fw:=inttrans[fourier](f(x),x,w);h:='h';
```

$$Fw := I\pi\,(9\,\mathrm{Dirac}(w+22\pi) + 2\,\mathrm{Dirac}(w+2\pi) - 2\,\mathrm{Dirac}(w-2\pi) + 5\,\mathrm{Dirac}(w+12\pi) - 5\,\mathrm{Dirac}(w-12\pi) - 9\,\mathrm{Dirac}(w-22\pi))$$

$$h := h \tag{2}$$

```
> ApproxDirac:=x->(1/2/h)*(piecewise(x+h<0,0,1)-piecewise(x-h<0,0,1));
```

$$ApproxDirac := x \rightarrow \frac{1}{2}\,\frac{piecewise(x+h<0,0,1) - piecewise(x-h<0,0,1)}{h} \tag{3}$$

```
> F:=subs(Dirac=ApproxDirac,Fw);
```

$$F := I\pi\,(9\,ApproxDirac(w+22\pi) + 2\,ApproxDirac(w+2\pi) - 2\,ApproxDirac(w-2\pi) + 5\,ApproxDirac(w+12\pi) - 5\,ApproxDirac(w-12\pi) - 9\,ApproxDirac(w-22\pi)) \tag{4}$$

```
> F:=F/I:
> h:=0.8:plot(F,w=-23*Pi..23*Pi);
```

Ready