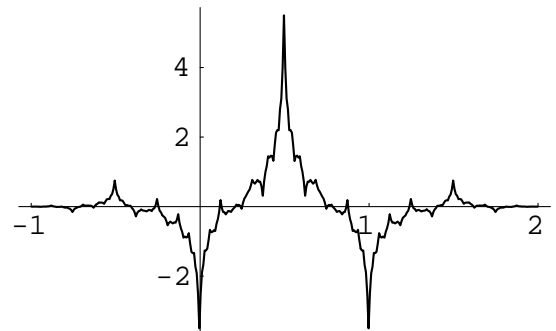
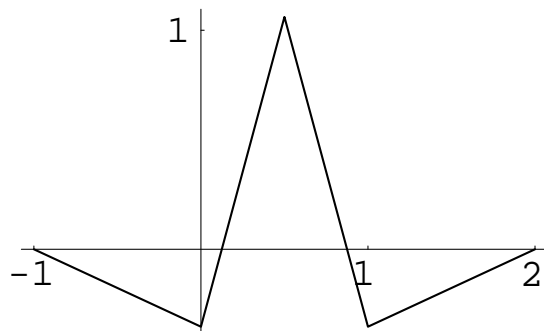
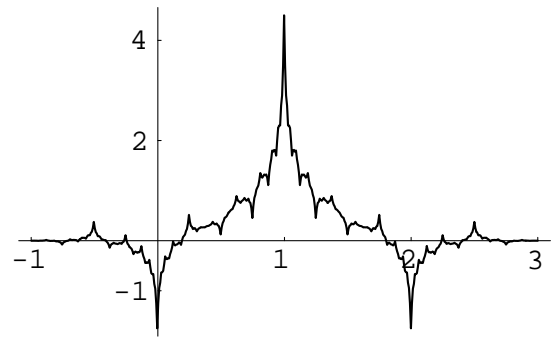
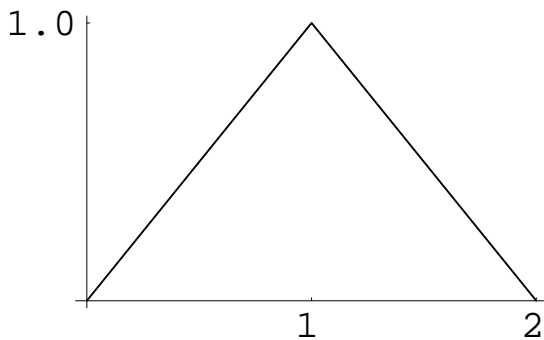




Wavelets – Theory and Applications (Winter 2008/09)

Bi-orthogonal Spline-Wavelet System of Order 2,2



Top: dual scaling functions, bottom: dual wavelets

symbol:

$$H_2(\omega) = \left(\frac{1 + e^{-i\omega}}{2} \right)^2$$

dual symbol:

$$\begin{aligned} H_{2,2}(\omega) &= \left(\frac{1 + e^{i\omega}}{2} \right)^2 P_2 \left(\sin^2 \left(\frac{\omega}{2} \right) \right) e^{-i2\omega} \\ &= \left(\frac{1 + e^{i\omega}}{2} \right)^2 \left(1 + 2 \sin^2 \left(\frac{\omega}{2} \right) \right) e^{-i2\omega} \\ &= \frac{1}{8} \left(-e^{i\omega} + 2 + 6e^{-i\omega} + 2e^{-i2\omega} - e^{-i3\omega} \right) \end{aligned}$$