

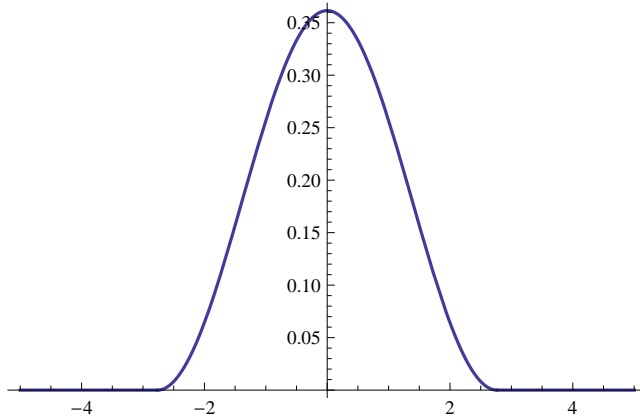
$$\text{sigma} = \text{Sqrt}\left[\frac{1}{3}(-6 + \pi^2)\right]$$

$$\sqrt{\frac{1}{3}(-6 + \pi^2)}$$

$$g[x_] := \text{UnitStep}[\text{Pi} - x] \text{UnitStep}[\text{Pi} + x] (1 + \text{Cos}[x]) / (2 \text{Pi})$$

$$h[x_] := \text{sigma} g[\text{sigma} x]$$

$$\text{timedomainplot} = \text{Plot}[h[x], \{x, -5, 5\}, \text{PlotStyle} \rightarrow \{\text{Thickness}[0.005]\}]$$



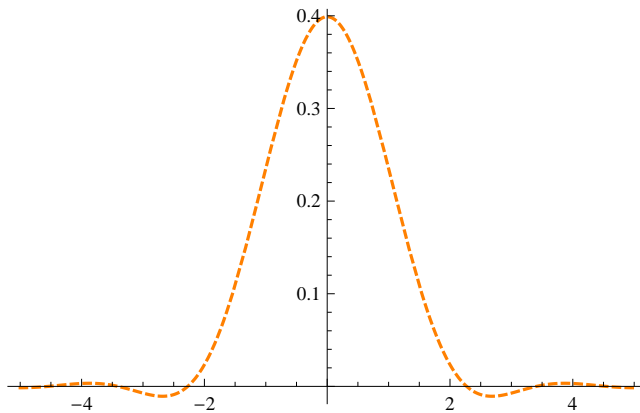
$$\text{FourierTransform}[h[x], x, t]$$

$$\frac{(-6 + \pi^2)^{3/2} \text{Sin}\left[\pi \sqrt{\frac{3}{-6 + \pi^2}} t\right]}{\sqrt{6} \pi^{3/2} t (-6 + \pi^2 - 3 t^2)}$$

$$\text{ht}[t_] := \frac{(-6 + \pi^2)^{3/2} \text{Sin}\left[\pi \sqrt{\frac{3}{-6 + \pi^2}} t\right]}{\sqrt{6} \pi^{3/2} t (-6 + \pi^2 - 3 t^2)}$$

$$\text{freqdomainplot} =$$

$$\text{Plot}[\text{ht}[t], \{t, -5, 5\}, \text{PlotStyle} \rightarrow \{\text{Orange}, \text{Thickness}[0.005], \text{Dashing}[0.01]\}]$$



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Show[timedomainplot, freqdomainplot, PlotRange -> {-0.02, 0.42}]
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