

In[1]:=

$$u1[t_] = \frac{\sqrt{\frac{2}{\pi}} (-t + \sin[\frac{\pi t}{2}])}{t (-1 + t^2)} + .46 (* \text{Input function / Mask form} *)$$

Plot[u1[t], {t, -6, 6}]

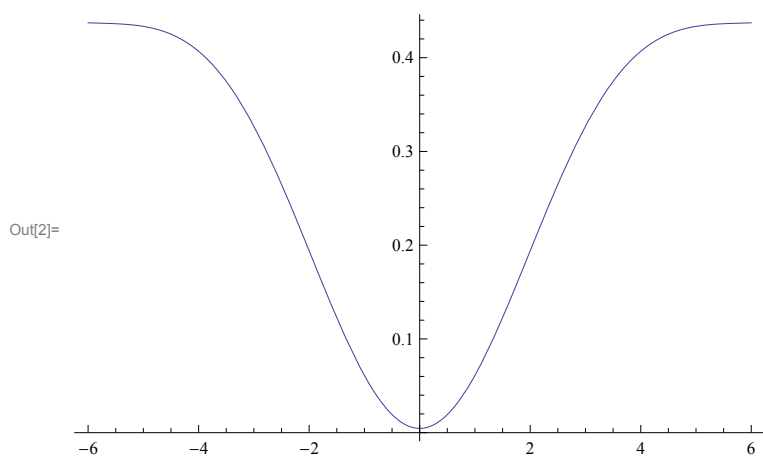
FourierTransform[u1[t], t, w]

$$fn[w_] = 1.15304900633026 * \text{DiracDelta}[w] + \frac{1}{2} \text{Sign}\left[-\frac{\pi}{2} + w\right] - \frac{1}{2} \text{Sign}\left[\frac{\pi}{2} + w\right] + \frac{1}{2} \text{Sign}[\pi - 2w] \sin[w] + \text{Sign}[w] \sin[w] - \frac{1}{2} \text{Sign}\left[\frac{\pi}{2} + w\right] \sin[w]$$

(* Output function / Fourier Transform *)

Plot[fn[w], {w, -6, 6}, PlotRange -> All]

$$\text{Out[1]} = 0.46 + \frac{\sqrt{\frac{2}{\pi}} (-t + \sin[\frac{\pi t}{2}])}{t (-1 + t^2)}$$



$$\text{Out[3]} = 1.15305 \text{DiracDelta}[w] + \frac{1}{2} \text{Sign}\left[-\frac{\pi}{2} + w\right] - \frac{1}{2} \text{Sign}\left[\frac{\pi}{2} + w\right] + \frac{1}{2} \text{Sign}[\pi - 2w] \sin[w] + \text{Sign}[w] \sin[w] - \frac{1}{2} \text{Sign}\left[\frac{\pi}{2} + w\right] \sin[w]$$

$$\text{Out[4]} = 1.15305 \text{DiracDelta}[w] + \frac{1}{2} \text{Sign}\left[-\frac{\pi}{2} + w\right] - \frac{1}{2} \text{Sign}\left[\frac{\pi}{2} + w\right] + \frac{1}{2} \text{Sign}[\pi - 2w] \sin[w] + \text{Sign}[w] \sin[w] - \frac{1}{2} \text{Sign}\left[\frac{\pi}{2} + w\right] \sin[w]$$

Out[5]=

