p. 528 ; 3. $f(x) = \begin{cases} k & 0 < x < b \\ 0 & \text{otherwise} \end{cases}$

$$\hat{f}(w) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} f(x) e^{-iwx} \, dx =$$

$$= \frac{1}{\sqrt{2\pi}} \int_{0}^{b} k e^{-iwx} \, dx$$

$$= \frac{k}{\sqrt{2\pi}} \left[\frac{1}{-iw} e^{-iwx} \right]_{x=0}^{b}$$

$$= \frac{k}{\sqrt{2\pi}} \left[\frac{e^{-iwb}}{-iw} - \left(\frac{1}{-iw} \right) \right]$$

$$= \frac{k}{iw\sqrt{2\pi}} \left(1 - e^{-iwb} \right)$$