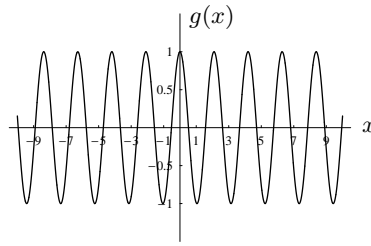
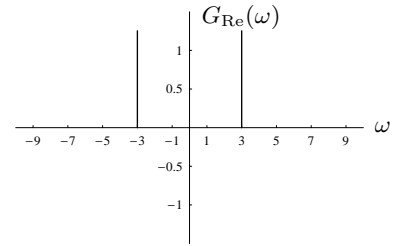


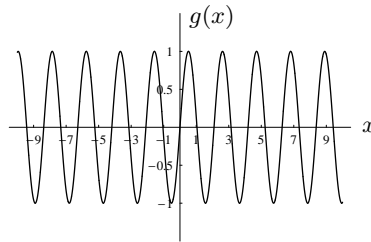
Abbildung 13.3
Fourier-Transformationspaare
– Kosinus-/Sinusfunktionen.



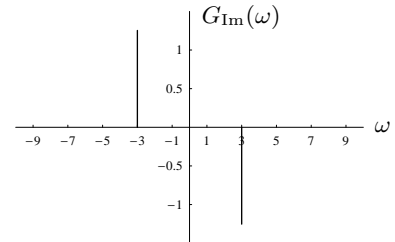
(a) Kosinus ($\omega_0=3$): $g(x) = \cos(3x)$



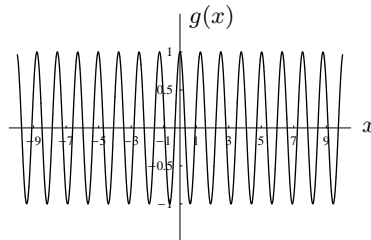
$$G(\omega) = \sqrt{\frac{\pi}{2}} \cdot (\delta(\omega + 3) + \delta(\omega - 3))$$



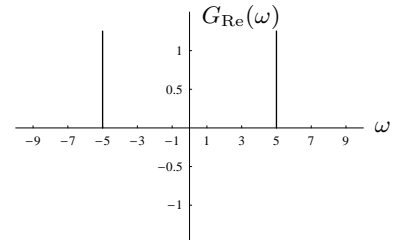
(b) Sinus ($\omega_0=3$): $g(x) = \sin(3x)$



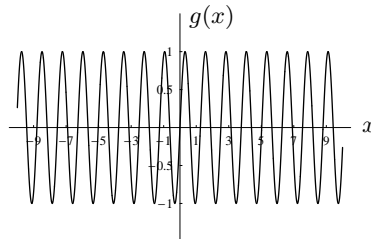
$$G(\omega) = i\sqrt{\frac{\pi}{2}} \cdot (\delta(\omega + 3) - \delta(\omega - 3))$$



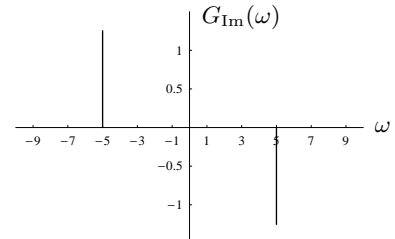
(c) Kosinus ($\omega_0=5$): $g(x) = \cos(5x)$



$$G(\omega) = \sqrt{\frac{\pi}{2}} \cdot (\delta(\omega + 5) + \delta(\omega - 5))$$

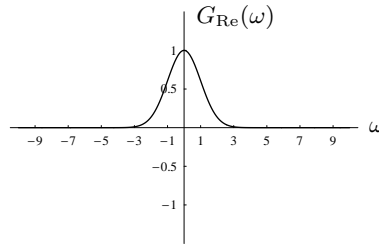
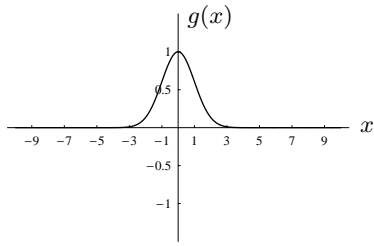


(d) Sinus ($\omega_0=5$): $g(x) = \sin(5x)$



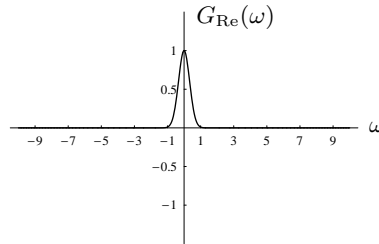
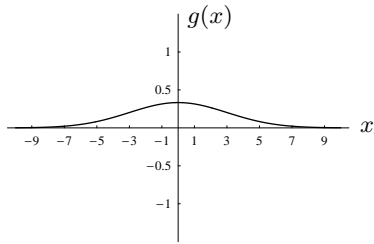
$$G(\omega) = i\sqrt{\frac{\pi}{2}} \cdot (\delta(\omega + 5) - \delta(\omega - 5))$$

Abbildung 13.4
Fourier-Transformationspaare –
Gauß-Funktion und Rechteckpuls.



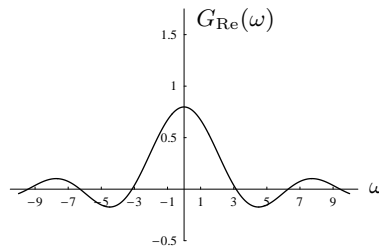
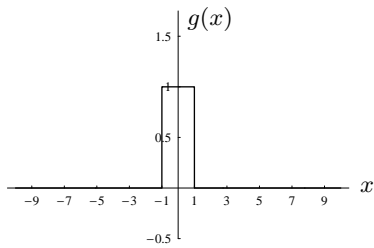
(a) Gauß ($\sigma=1$): $g(x) = e^{-\frac{x^2}{2}}$

$G(\omega) = e^{-\frac{9\omega^2}{2}}$



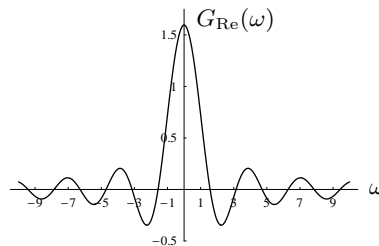
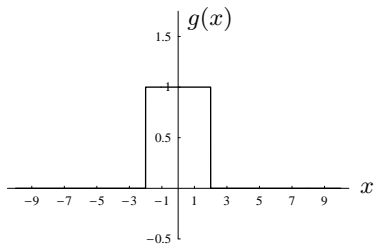
(b) Gauß ($\sigma=3$): $g(x) = \frac{1}{3} \cdot e^{-\frac{x^2}{2 \cdot 9}}$

$G(\omega) = e^{-\frac{9\omega^2}{2}}$



(c) Rechteckpuls ($b=1$): $g(x) = \Pi_1(x)$

$G(\omega) = \frac{2 \sin(\omega)}{\sqrt{2\pi}\omega}$



(d) Rechteckpuls ($b=2$): $g(x) = \Pi_2(x)$

$G(\omega) = \frac{4 \sin(2\omega)}{\sqrt{2\pi}\omega}$