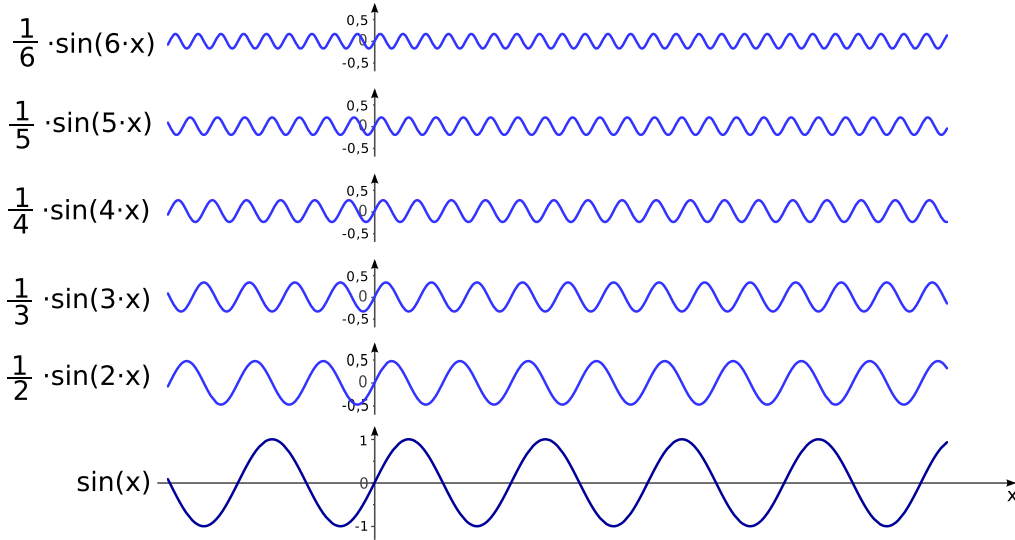




Addition von sin-Funktionen: Annäherung von Sägezahn und Rechteck

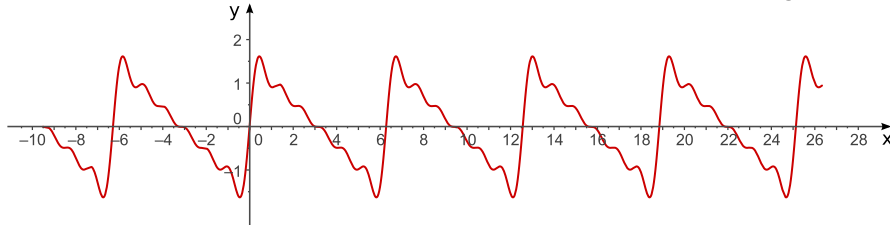
Sägezahn angenähert:

Einzeln



Summe

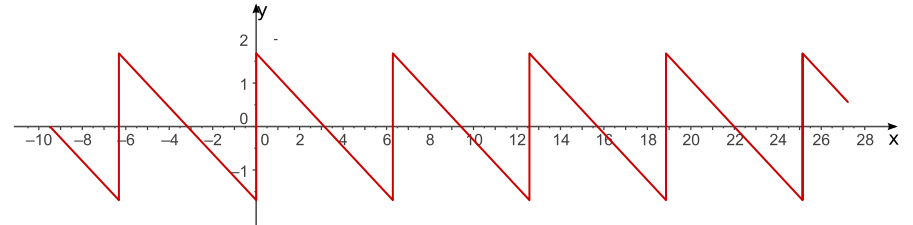
$$f(x) = \sin(x) + \frac{1}{2} \cdot \sin(2 \cdot x) + \frac{1}{3} \cdot \sin(3 \cdot x) + \frac{1}{4} \cdot \sin(4 \cdot x) + \frac{1}{5} \cdot \sin(5 \cdot x) + \frac{1}{6} \cdot \sin(6 \cdot x)$$



Sägezahn:

$$f(x) = \sum_{k=1}^{\infty} \left(\frac{1}{k} \cdot \sin(k \cdot x) \right)$$

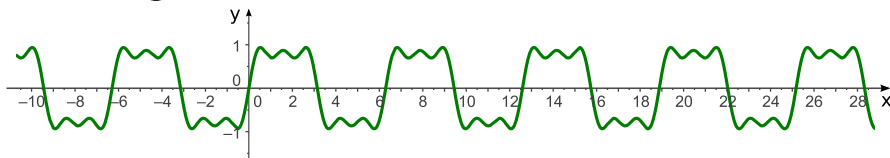
$$= \sin(x) + \frac{1}{2} \cdot \sin(2 \cdot x) + \frac{1}{3} \cdot \sin(3 \cdot x) + \frac{1}{4} \cdot \sin(4 \cdot x) + \dots$$



Rechteck angenähert:

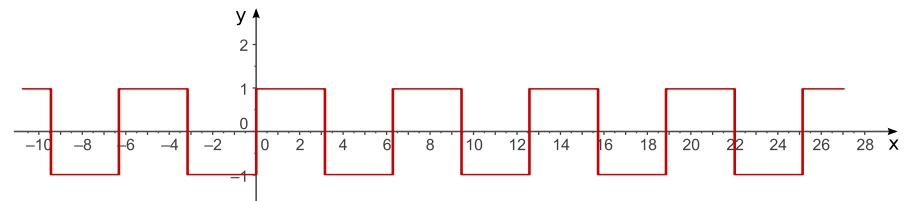
Summe

$$f(x) = \sin(x) + \frac{1}{3} \cdot \sin(3 \cdot x) + \frac{1}{5} \cdot \sin(5 \cdot x)$$

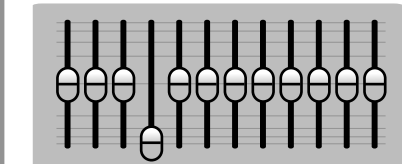
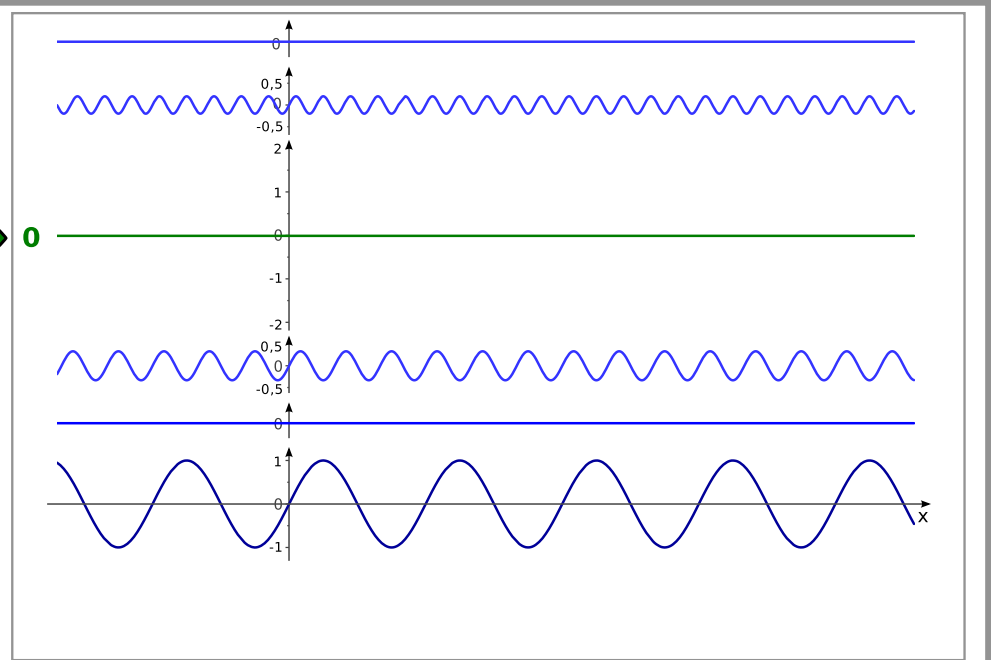
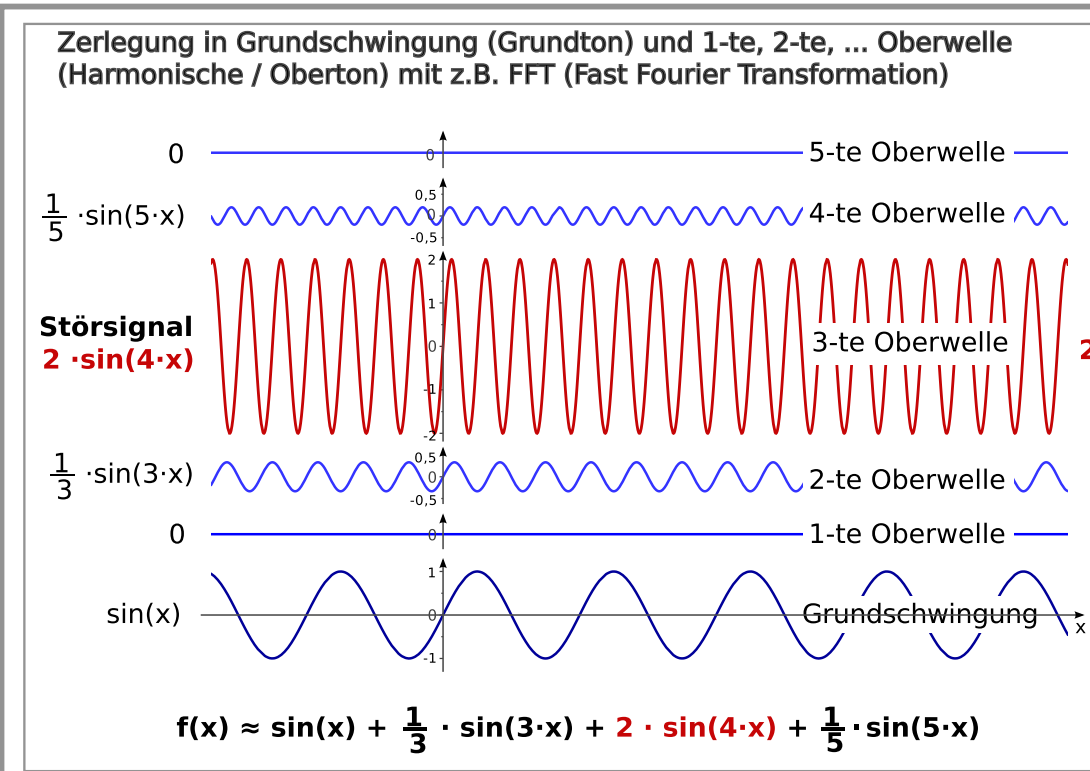
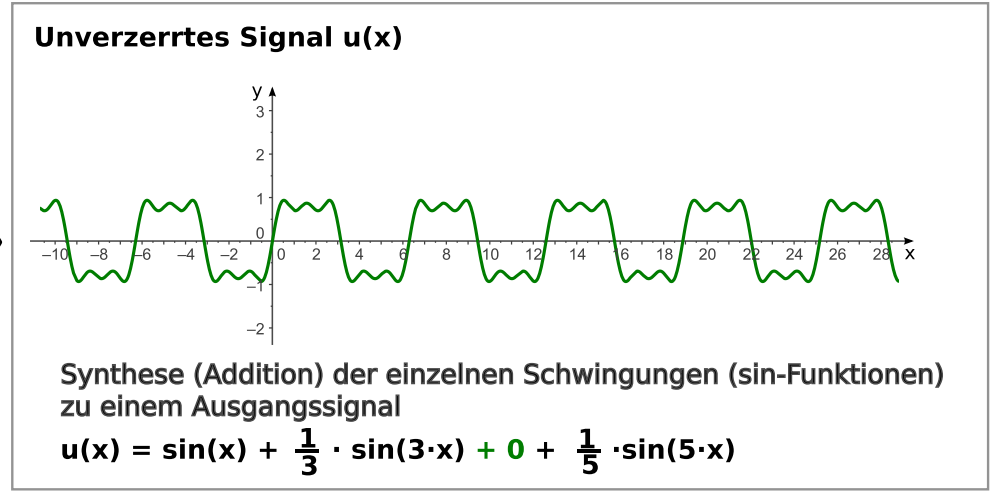
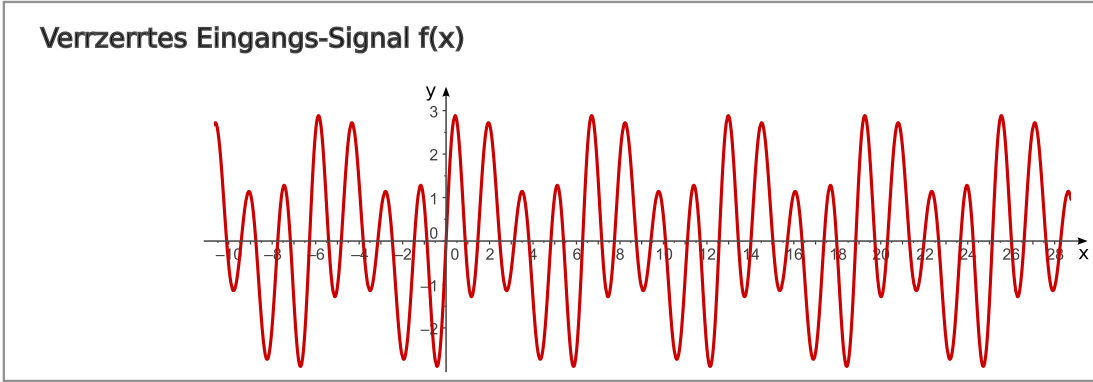


Rechteck:

$$f(x) = \sin(x) + \frac{1}{3} \cdot \sin(3 \cdot x) + \frac{1}{5} \cdot \sin(5 \cdot x) + \frac{1}{7} \cdot \sin(7 \cdot x) + \dots$$



Zusammengesetzte sin-Funktionen: Anwendung: Filter



Verändern (Filtern) des Signals:
Abschwächen/Verstärken von einzelnen oder mehreren Oberwellen oder der Grundschwingung. Hier: $2 \cdot \sin(4 \cdot x) \mapsto 0$