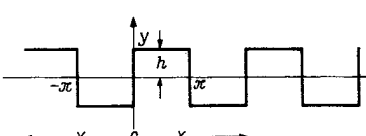
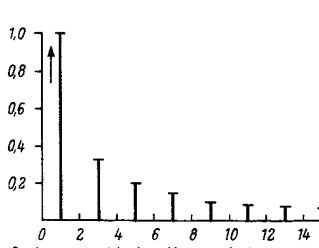
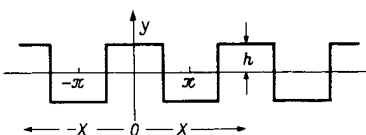
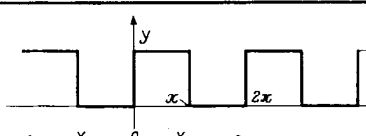
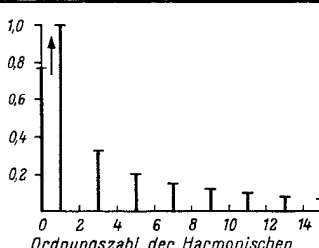
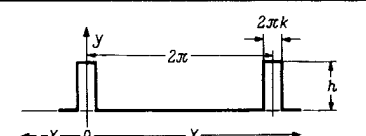
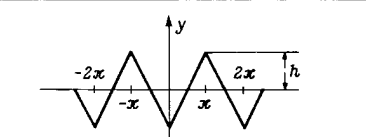
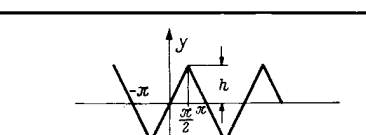
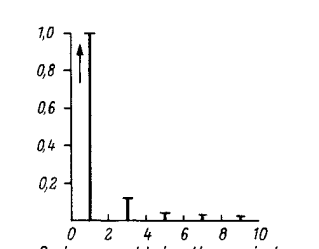
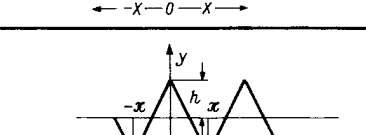
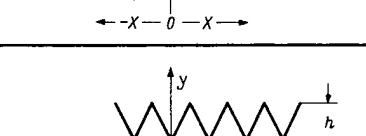
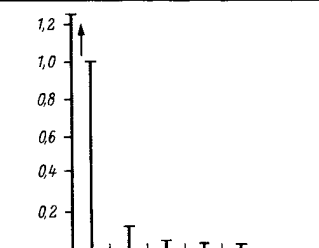
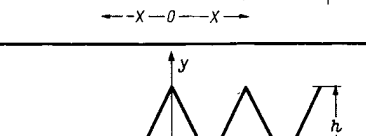
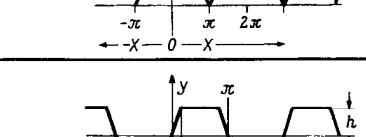
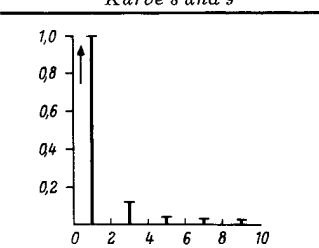
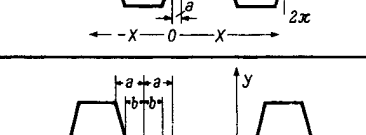
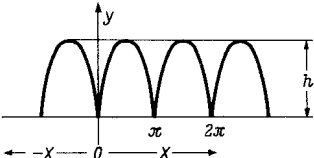
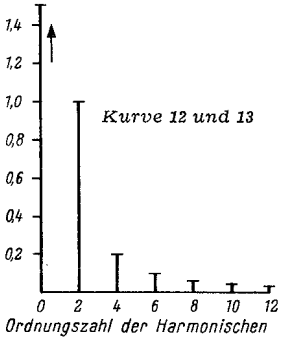
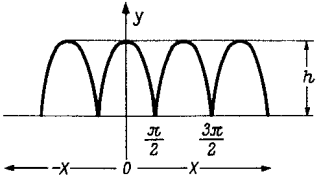
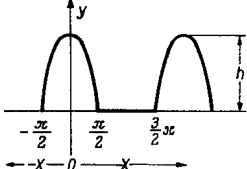
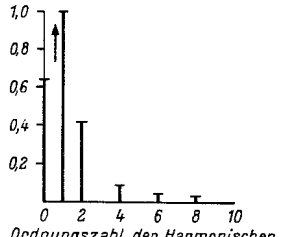
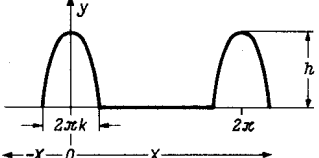
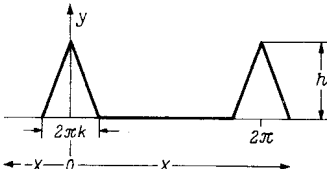
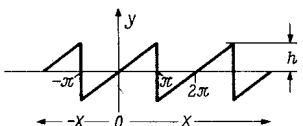
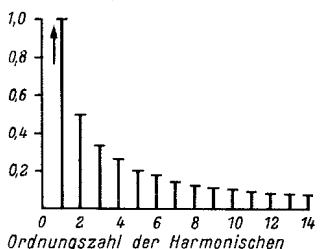
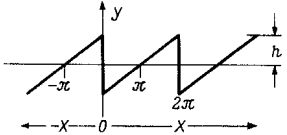
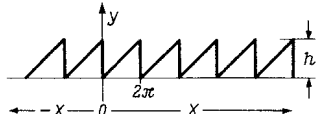
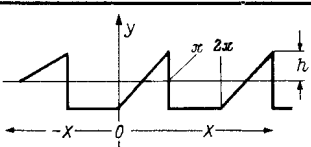
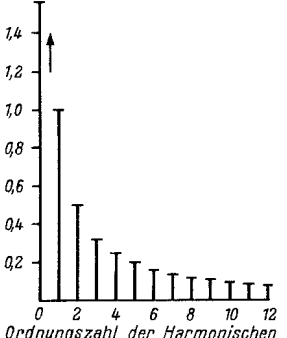
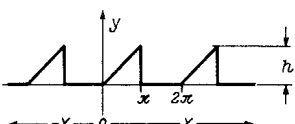
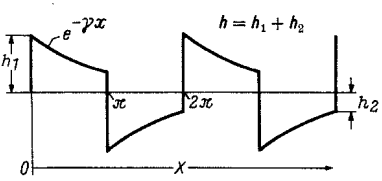


# Funkschau Fourier-Reihen

## C. Formelzusammenstellung

Kurvenverlauf	Gleichung	Oberwellenaufbau
<p>1</p> 	$f(x) = \frac{4h}{\pi} \left( \sin x + \frac{\sin 3x}{3} + \frac{\sin 5x}{5} + \frac{\sin 7x}{7} + \frac{\sin 9x}{9} \dots \right)$	 <p>Ordnungszahl der Harmonischen</p> <p>Kurve 1 und 2</p>
<p>2</p> 	$f(x) = \frac{4h}{\pi} \left( \cos x - \frac{\cos 3x}{3} + \frac{\cos 5x}{5} - \frac{\cos 7x}{7} + \frac{\cos 9x}{9} \dots \right)$	
<p>3</p> 	$f(x) = \frac{h}{2} + \frac{2h}{\pi} \left( \sin x + \frac{\sin 3x}{3} + \frac{\sin 5x}{5} \dots \right)$	 <p>Ordnungszahl der Harmonischen</p> <p>Kurve 3</p>
<p>4</p> 	$f(x) = h \left\{ k + \frac{2}{\pi} \left( \sin k\pi \cos x + \frac{1}{2} \sin 2k\pi \cdot \cos 2x + \frac{1}{3} \sin 3k\pi \cos 3x \dots \right) \right\}$	
<p>5</p> 	$f(x) = -\frac{8h}{\pi^2} \left( \frac{\cos x}{1^2} + \frac{\cos 3x}{3^2} + \frac{\cos 5x}{5^2} \dots \right)$	
<p>6</p> 	$f(x) = \frac{8h}{\pi^2} \left( \sin x - \frac{\sin 3x}{3^2} + \frac{\sin 5x}{5^2} \dots \right)$	 <p>Ordnungszahl der Harmonischen</p> <p>Kurve 5, 6 und 7</p>
<p>7</p> 	$f(x) = \frac{8h}{\pi^2} \left( \cos x + \frac{\cos 3x}{3^2} + \frac{\cos 5x}{5^2} \dots \right)$	
<p>8</p> 	$f(x) = \frac{h}{2} - \frac{4h}{\pi^2} \left( \cos x + \frac{\cos 3x}{3^2} + \frac{\cos 5x}{5^2} \dots \right)$	 <p>Ordnungszahl der Harmonischen</p> <p>Kurve 8 und 9</p>
<p>9</p> 	$f(x) = \frac{h}{2} + \frac{4h}{\pi^2} \left( \frac{\cos x}{1^2} + \frac{\cos 3x}{3^2} + \frac{\cos 5x}{5^2} \dots \right)$	
<p>10</p> 	$f(x) = \frac{4h}{\alpha \cdot \pi} \left( \frac{\sin \alpha}{1^2} \cdot \sin x + \frac{\sin 3\alpha}{3^2} \cdot \sin 3x + \frac{\sin 5\alpha}{5^2} \cdot \sin 5x \dots \right)$	 <p>Ordnungszahl der Harmonischen</p> <p>Kurve 10 bei <math>\alpha = \pi/4</math></p>
<p>11</p> 	$f(x) = \frac{4h}{\pi(\alpha - \beta)} \left( \frac{\sin \alpha - \sin \beta}{1^2} \sin x + \frac{\sin 3\alpha - \sin 3\beta}{3^2} \sin 3x + \frac{\sin 5\alpha - \sin 5\beta}{5^2} \sin 5x \dots \right)$	

Kurvenverlauf	Gleichung	Oberwellenaufbau
12 	Halbwellen von sin- und -sin- Schwingungen $f(x) = \frac{2h}{\pi} - \frac{4h}{\pi} \left( \frac{\cos 2x}{3} + \frac{\cos 4x}{3 \cdot 5} + \frac{\cos 6x}{5 \cdot 7} \dots \right)$	 <p>Kurve 12 und 13</p>
13 	Halbwellen von cos- und -cos- Schwingungen $f(x) = \frac{2h}{\pi} - \frac{4h}{\pi} \left( -\frac{\cos 2x}{3} + \frac{\cos 4x}{3 \cdot 5} - \frac{\cos 6x}{5 \cdot 7} + \dots \right)$	
14 	Halbwellen einer cos- Schwingung $f(x) = \frac{h}{\pi} + \frac{h}{2} \cos x + \frac{2h}{\pi} \left( \frac{\cos 2x}{1 \cdot 3} - \frac{\cos 4x}{3 \cdot 5} + \frac{\cos 6x}{5 \cdot 7} - \dots \right)$	 <p>Kurve 14</p>
15 	Halbwellen einer cos- Schwingung $f(x) = \frac{2kh}{\pi} + \frac{4kh}{\pi} \sum_{n=1}^{\infty} \frac{\cos n\pi k}{1 - 4k^2 n^2} \cdot \cos nx$	
16 	$f(x) = \frac{hk}{2} + \frac{2h}{\pi^2 k} \sum_{n=1}^{\infty} \frac{1 - \cos n\pi k}{n^2} \cdot \cos nx$	
17 	$f(x) = \frac{2h}{\pi} \left( \frac{\sin x}{1} - \frac{\sin 2x}{2} + \frac{\sin 3x}{3} - \frac{\sin 4x}{4} \right)$	 <p>Kurve 17 und 18</p>
18 	$f(x) = -\frac{2h}{\pi} \left( \sin x + \frac{1}{2} \sin 2x + \frac{1}{3} \sin 3x \dots \right)$	
19 	$f(x) = \frac{h}{2} - \frac{h}{\pi} \left( \frac{\sin x}{1} + \frac{\sin 2x}{2} + \frac{\sin 3x}{3} \dots \right)$	
20 	$f(x) = -\frac{h}{2} - \frac{4h}{\pi^2} \left( \cos x + \frac{\cos 3x}{3^2} + \frac{\cos 5x}{5^2} \dots \right) + \frac{2h}{\pi} \left( \sin x - \frac{\sin 2x}{2} + \frac{\sin 3x}{3} \dots \right)$	 <p>Kurve 19</p>
21 	$f(x) = \frac{h}{4} - \frac{2h}{\pi^2} \left( \cos x + \frac{\cos 3x}{3^2} + \frac{\cos 5x}{5^2} + \dots \right) + \frac{h}{\pi} \left( \frac{\sin x}{1} - \frac{\sin 2x}{2} + \frac{\sin 3x}{3} \dots \right)$	
22 	$f(x) = \frac{2h\gamma}{\pi} \sum_{n=0}^{\infty} \frac{\cos (2n+1)x}{\gamma^2 + (2n+1)^2} + \frac{2h}{\pi} \sum_{n=0}^{\infty} \frac{(2n+1) \sin (2n+1)x}{\gamma^2 + (2n+1)^2}$	