

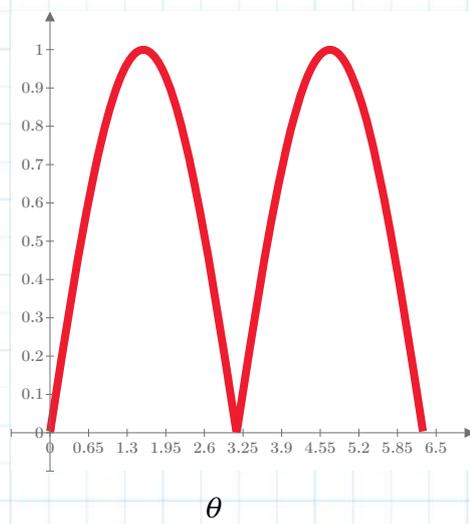
## Ex.F4 Fourier-Analysis (Full-Wave Rectification)

$$E_m := 1 \text{ V} \quad f := 50 \text{ Hz} \quad \phi := 0 \text{ deg} \quad \omega := 2 \cdot \pi \cdot f$$

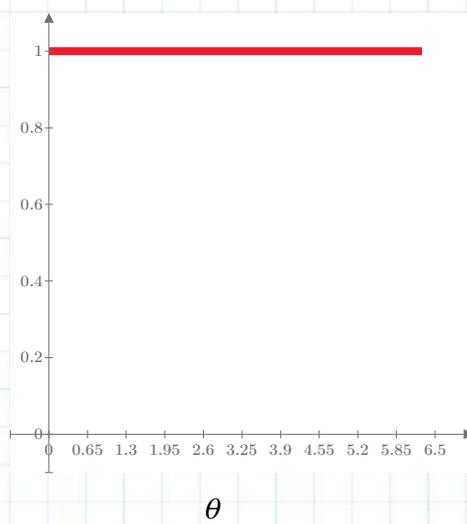
$$m := 100 \quad m: \text{ Number of harmonics}$$

$$\theta := 0, 0.01 \dots 2 \pi$$

$$f(\theta) := \frac{2}{\pi} + \sum_{n=1}^m \left( \frac{4}{\pi} \cdot \frac{-1}{(2 \cdot n)^2 - 1} \cdot \cos(2 \cdot n \cdot (\theta + \phi)) \right)$$


 $f(\theta)$ 

$$f(\theta) := 1$$


 $f(\theta)$

$$f(\theta) := \frac{1}{2} + \frac{4}{\pi^2} \cdot \left( \sum_{n=1}^m \left( \frac{-(-1)^n \cdot \sin\left(2 \cdot (2 \cdot n - 1) \cdot \left(\theta + \phi - \frac{\pi}{4}\right)\right)}{(2 \cdot n - 1)^2} \right) \right)$$

