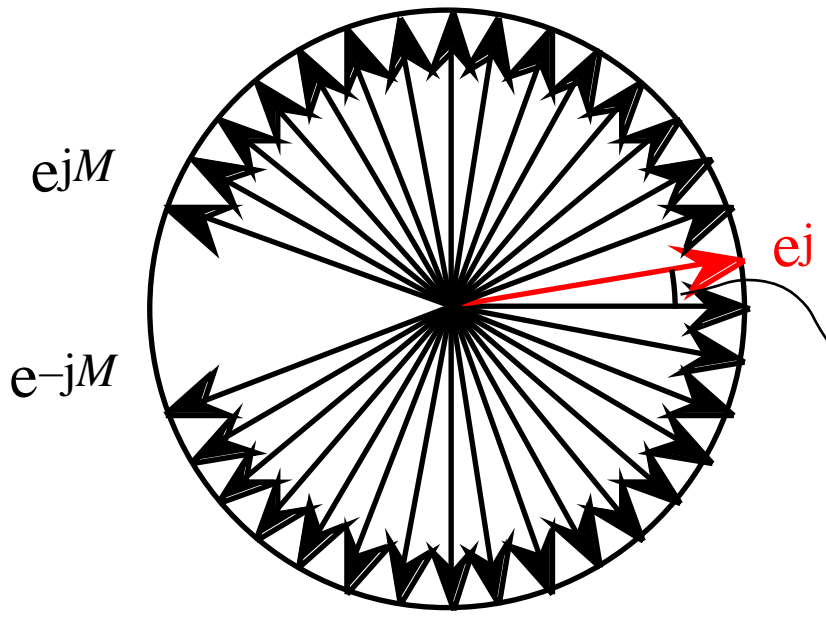


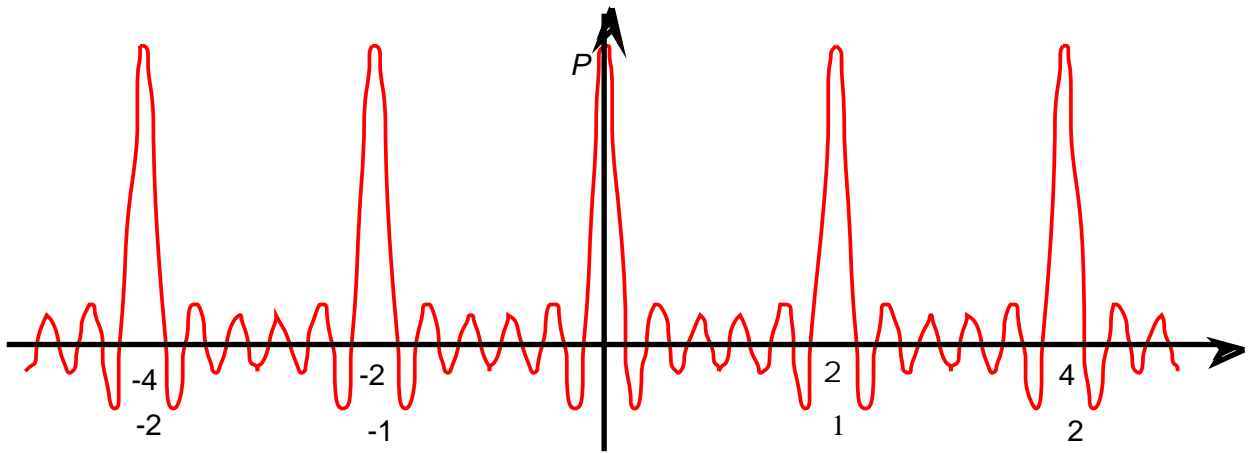
## **Dagens teman**

- Pulståg, sampling, periodisk fortsättning (F 5)
- Egenskaper hos fourierserietransformen (F 6)



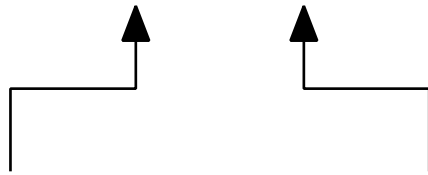
$$= \frac{1}{18} = 10^\circ$$

$$M = 16, P = 33$$



$$\sum_{n=-M}^M e^{2jn} = \frac{\sin P}{\sin \frac{P}{2}}, P = 2M + 1$$

= 2



Radianer

Varv

## Viktiga summationer

- $$\sum_{n=-M}^M e^{jn\omega t} = \frac{\sin P \omega t/2}{\sin \omega t/2}, P = 2M + 1$$

= antalet termer

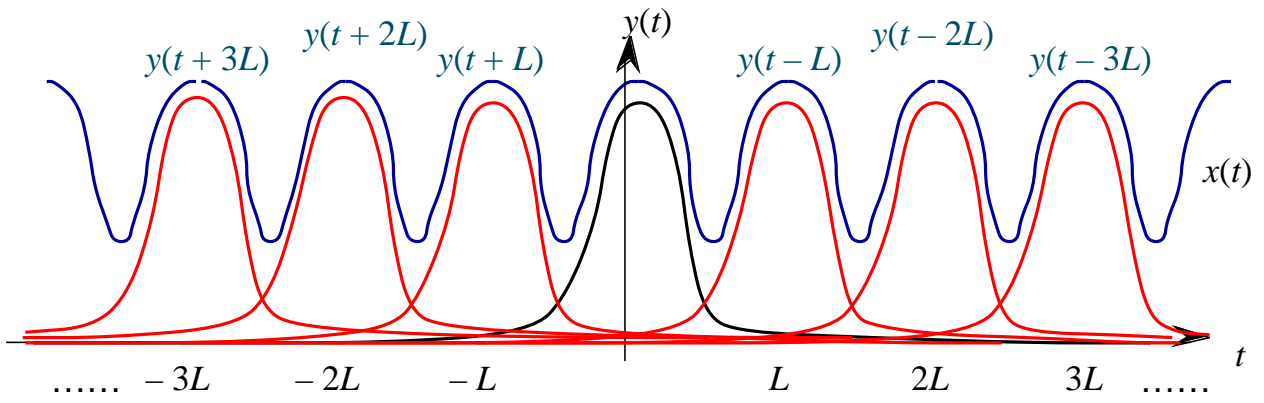
Summa av alla harmoniska signaler med heltalsfrekvenser:

- $$\sum_{n=-\infty}^{\infty} e^{jn\omega t} = \sum_{n=-\infty}^{\infty} \delta(t - nT)$$

Generellare: Summa av alla  $T$ -periodiska harmoniska signaler

- $$\sum_{n=-\infty}^{\infty} e^{jn\omega t/T} = T \sum_{n=-\infty}^{\infty} \delta(t - nT)$$





$$x(t) = \sum_{n=-\infty}^{\infty} y(t - nL) \quad x(t) = y(t) * \sum_{n=-\infty}^{\infty} \delta(t - nL)$$

## Viktiga egenskaper hos fourierserietransformen

$L$ -periodisk funktionen	Fourierserie- koefficienter
$x(t)$ $y(t)$	$c_n$ $d_n$
$C x(t) + D y(t)$ , $C$ och $D$ konstanta	$C c_n + D d_n$
$x'(t)$	$\frac{2}{L} n j c_n$
$x''(t)$	$-\frac{4}{L^2} n^2 c_n$
$x^{(m)}(t)$	$\frac{2}{L} n j^m c_n$
$x(t - a)$	$e^{-2 n j a / L} \cdot c_n$
$(t - nL)$ $n = -$	$c_n = \frac{1}{L}$

### *Parsevals relation*

$$\frac{1}{L} \int_{\langle L \rangle} |x(t)|^2 dt = \sum_{n=-} |c_n|^2.$$