

$$m \wedge n = 1 \Rightarrow \frac{1}{\sqrt{n}} \sum_k^n e^{-\pi i m/n} e^{k} = \frac{-\pi i/4 \epsilon}{\sqrt{m}} \sum_j^m e^{\pi i n/m} e^j$$

$$n \text{ odd} \Rightarrow \frac{1}{\sqrt{n}} \sum_k^n e^{2\pi i/n} e^k = \frac{1 - i^n}{1 - i}$$