

Useful Facts About Complex Numbers

1. $e^{j\theta} = \cos \theta + j \sin \theta$ (Euler's formula)
2. $\cos \theta = \frac{1}{2} (e^{j\theta} + e^{-j\theta})$ (Inverse Euler formula)
3. $\sin \theta = \frac{1}{2j} (e^{j\theta} - e^{-j\theta})$ (Another Inverse Euler formula)
4. $1 = e^{j2\pi} = e^{j2\pi n}$ for any integer n
5. $-1 = e^{j\pi} = e^{-j\pi}$
6. $(-1)^n = e^{j\pi n}$
7. $j = e^{j\pi/2}$
8. $-j = \frac{1}{j} = e^{-j\pi/2}$