

Equations to Know

$$\omega = 2\pi f \quad f = \frac{\omega}{2\pi} \quad f \text{ in Hertz (Hz)} \quad \omega \text{ in Radians/sec}$$

$$\cos(2\pi f_o t) = \frac{e^{j2\pi f_o t} + e^{-j2\pi f_o t}}{2}$$

$$x + jy = re^{j\theta} = r \cos(\theta) + jr \sin(\theta)$$

$$r = \sqrt{x^2 + y^2} \text{ and } \theta = \tan^{-1}\left(\frac{y}{x}\right)$$

$$e^{j2\pi f_o t} = \cos(2\pi f_o t) + j \sin(2\pi f_o t)$$

$$j = \sqrt{-1} \quad j^2 = -1 \quad j^3 = -j \quad j^4 = 1$$