These formula are provided...

$$2\cos^2 x = 1 + \cos(2x)$$

$$2\sin^2 x = 1 - \cos(2x)$$

$$G(f) = \int_{-\infty}^{\infty} g(t) e^{-j2\pi ft} dt$$

$$\cos(2\pi f_c t + \theta) \overset{\mathcal{F}}{\rightleftharpoons} \frac{1}{2}\delta(f - f_c)e^{j\theta} + \frac{1}{2}\delta(f + f_c)e^{-j\theta}$$

$$g(t - t_0) \overset{\mathcal{F}}{\rightleftharpoons} e^{-j2\pi ft_0} G(f)$$

$$e^{j2\pi f_0 t} g(t) \overset{\mathcal{F}}{\rightleftharpoons} G(f - f_0)$$

$$g(t)\cos(2\pi f_c t) \overset{\mathcal{F}}{\rightleftharpoons} \frac{1}{2}G(f - f_c) + \frac{1}{2}G(f + f_c)$$

$$\text{DFT} : X[k] = \sum_{n=0}^{N-1} x[n] \exp\left(-jnk\frac{2\pi}{N}\right)$$

$$\text{IDFT} : x[n] = \frac{1}{N}\sum_{k=0}^{N-1} X[k] \exp\left(jnk\frac{2\pi}{N}\right)$$