$$Ev\{x(t)\} = \frac{1}{2}[x(t) + x(-t)] \qquad Od\{x(t)\} = \frac{1}{2}[x(t) - x(-t)]$$

$$\cos(\omega_0 t) = \frac{1}{2}\left(e^{j\omega_0 t} + e^{-j\omega_0 t}\right) \qquad \sin(\omega_0 t) = \frac{1}{2j}\left(e^{j\omega_0 t} - e^{-j\omega_0 t}\right)$$

$$T_0 = \frac{2\pi}{|\omega_0|} \qquad e^{j\omega t} \to H(j\omega)e^{j\omega t}$$

$$E = \int_{t_1}^{t_2} |x(t)|^2 dt \qquad E = \sum_{n=n_1}^{n_2} |x[n]|^2$$

$$H(j\omega) = \int_{-\infty}^{\infty} h(\tau)e^{-j\omega\tau} dt \qquad H(z) = \sum_{k=-\infty}^{\infty} h[k]z^{-k}$$

$$x[n] * h[n] = \sum_{k=-\infty}^{\infty} x[k]h[n-k] \qquad x(t) * h(t) = \int_{-\infty}^{\infty} x(\tau)h(t-\tau)d\tau$$

$$x(t) = \sum_{k=-\infty}^{\infty} a_k e^{jk\omega_0 t} \qquad x[n] = \sum_{k=<N>} a_k e^{jk\omega_0 n}$$

$$a_k = \frac{1}{T}\int_T x(t)e^{-jk\omega_0 t} dt \qquad a_k = \frac{1}{N}\sum_{n=<N>} x[n]e^{-jk\omega_0 n}$$

Convolution is commutative, distributive, associative.
For LTI system to be causal, impulse response must be 0 for all $n < 0$
For LTI system to be stable, $\sum_{k=-\infty}^{\infty} |h[k]| < \infty$ or $\int_{-\infty}^{\infty} |h(t)|dt < \infty$