$s(t)$	:	$S_n = R_n + \mathrm{j}I_n$
$s(t)$ reale	:	$S_n = S_{-n}^*$
$s(t)$ pari, $s(t) = s(-t)$	:	$S_n = S_{-n}$
$s(t)$ reale e pari	:	$S_n = R_n = R_{-n}$
$s(t)$ dispari, $s(t) = -s(-t)$	:	$S_n = -S_{-n}$
$s(t)$ reale e dispari	:	$S_n = \mathrm{j}I_n = -\mathrm{j}I_{-n}$
$s(t)$ alternativo, $s(t) = -s(t + T_0/2)$	:	$S_{2k} = 0$

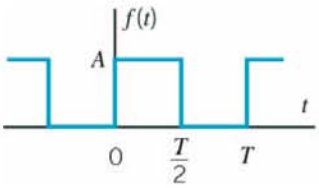
PROPRIETA'	SEGNALE	SF
	segnale continuo periodico, di periodo T_0, a potenza finita	S_n $f_0 = 1/T_0$
	$s(t) = \sum_{n=-\infty}^{\infty} S_n e^{j2\pi nt/T_0}$	$S_n = \frac{1}{T_0}\int_{t_0}^{t_0+T_0} s(t)\, e^{-j2\pi nt/T_0}\, dt$
LINEARITA'	$ax(t) + by(t)$	$aX_n + bY_n$
TRASLAZIONE TEMPORALE	$s(t - t_0)$	$S_n\, e^{-j2\pi nt_0/T_0}$
TRASLAZIONE IN FREQUENZA	$s(t)\, e^{j2\pi mt/T_0}$	S_{n-m}
DERIVAZIONE TEMPORALE	$ds(t)/dt$	$(j2\pi n/T_0)S_n$
INTEGRAZIONE	$\int_{-\infty}^{t} s(\alpha)\, d\alpha$	$(T_0/j2\pi n)S_n$
INVERSIONE ASSE TEMPI	$s(-t)$	S_{-n}
CONIUGAZIONE	$s^*(t)$	S_{-n}^*
CONVOLUZIONE TEMPORALE	$s(t) = (1/T_0)\int_{t_0}^{t_0+T_0} x(\tau)\, y(t-\tau)\, d\tau$	$S_n = X_n Y_n$
PRODOTTO (Convoluzione in frequenza)	$s(t) = x(t)\, y(t)$	$S_n = \sum_{k=-\infty}^{\infty} X_k Y_{n-k} = (X_n \otimes Y_n)/f_0$
CORRELAZIONE TEMPORALE	$s(t) = (1/T_0)\int_{t_0}^{t_0+T_0} x(\tau)\, y^*(\tau - t) d\tau$	$S_n = X_n Y_n^*$
CORRELAZIONE IN FREQUENZA	$s(t) = x(t)\, y^*(t)$	$S_n = \sum_{k=-\infty}^{\infty} X_k Y_{k-n}^* = (X_n \otimes Y_{-n}^*)/f_0$

$$\frac{1}{T_0}\int_{t_0}^{t_0+T_0} x(\tau)\, y^*(\tau)\, \mathrm{d}\tau = \sum_{n=-\infty}^{\infty} X_n Y_n^*$$

$$\frac{1}{T_0}\int_{t_0}^{t_0+T_0} |x(t)|^2\, \mathrm{d}t = \sum_{n=-\infty}^{\infty} |X_n|^2$$

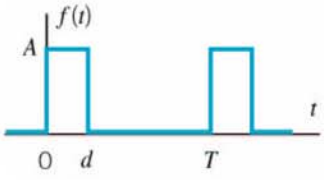
Table 15.4-1 The Fourier Series of Selected Waveforms.

Function	Trigonometric Fourier Series



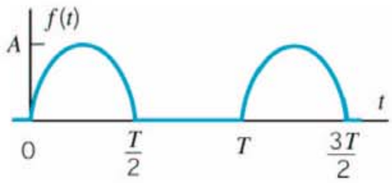
Square wave: $\omega_0 = \dfrac{2\pi}{T}$

$$f(t) = \frac{A}{2} + \frac{4A}{\pi}\sum_{n=1}^{\infty}\frac{\sin\left((2n-1)\omega_0 t\right)}{2n-1}$$



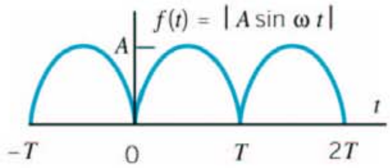
Pulse wave: $\omega_0 = \dfrac{2\pi}{T}$

$$f(t) = \frac{Ad}{2} + \frac{2Ad}{\pi}\sum_{n=1}^{\infty}\frac{\sin\left(\dfrac{n\pi d}{T}\right)}{\dfrac{n\pi d}{T}}\cos\left(n\omega_0 t\right)$$



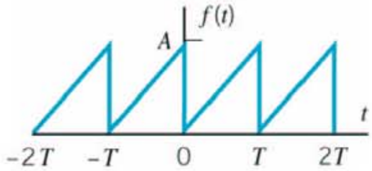
Half wave rectified sine wave: $\omega_0 = \dfrac{2\pi}{T}$

$$f(t) = \frac{A}{\pi} + \frac{A}{2}\sin\omega_0 t - \frac{2A}{\pi}\sum_{n=1}^{\infty}\frac{\cos\left(2n\omega_0 t\right)}{4n^2-1}$$



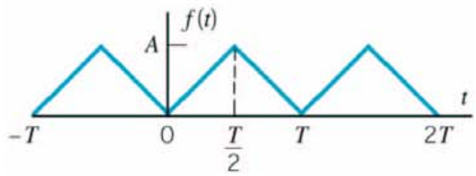
Full wave rectified sine wave: $\omega_0 = \dfrac{2\pi}{T}$

$$f(t) = \frac{2A}{\pi} - \frac{4A}{\pi}\sum_{n=1}^{\infty}\frac{\cos\left(n\omega_0 t\right)}{4n^2-1}$$



Sawtooth wave: $\omega_0 = \dfrac{2\pi}{T}$

$$f(t) = \frac{A}{2} + \frac{A}{\pi}\sum_{n=1}^{\infty}\frac{\sin\left(n\omega_0 t\right)}{n}$$



Triangle wave: $\omega_0 = \dfrac{2\pi}{T}$

$$f(t) = \frac{A}{2} - \frac{4A}{\pi^2}\sum_{n=1}^{\infty}\frac{\cos\left((2n-1)\omega_0 t\right)}{(2n-1)^2}$$

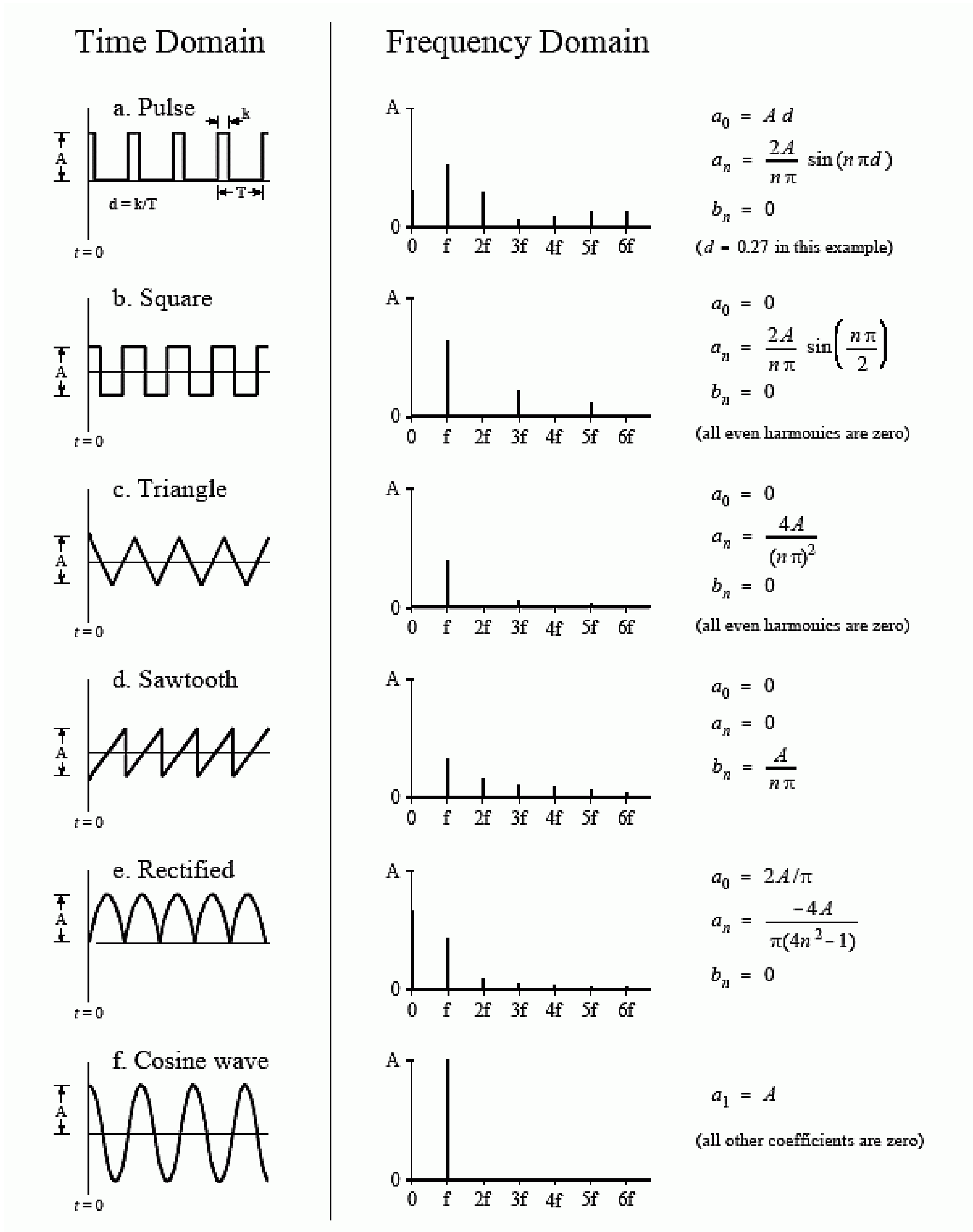


FIGURE 13-10
Examples of the Fourier series. Six common time domain waveforms are shown, along with the equations to calculate their "a" and "b" coefficients.