Evidencia 1.5

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$$C_n=\frac{1}{2}(a_n-ib_n)$$

$$b_n=\frac{4}{T}\int_0^T f(t)\,\mathrm{sen}(n\omega_0 t)\,dt$$

$$b_n=\frac{4}{2\pi}\int_0^{2\pi} e^{-t}\,\mathrm{sen}(t)\,dt$$

$$b_n=\frac{2n}{\pi(n^2+1)}\left(-e^{-\pi}(-1)^n+1\right)$$

$$C_n=\frac{1}{2}\left(0-j\,\frac{2n(-e^{-\pi}(-1)^n+1)}{\pi(n^2+1)}\right)-\frac{2n(-e^{-\pi}(-1)^n+1)}{2j\pi(n^2+1)}$$

$$C_n=-\frac{n(-e^{-\pi}(-1)^n+1)}{j\pi(n^2+1)}\rightarrow|C_n|=\left|\frac{-n(-e^{-\pi}(-1)^n+1)}{j\pi(n^2+1)}\right|$$

$$|C_n|=\sqrt{0+\left(\frac{-n(-e^{-\pi}(-1)^n+1)}{\pi(n^2+1)}\right)^2}=\sqrt{\left(\frac{-n(-e^{-\pi}(-1)^n+1)}{\pi(n^2+1)}\right)^2}$$

$$|C_n|=\frac{-n(-e^{-\pi}(-1)^n+1)}{\pi(n^2+1)}\quad \forall n\neq 0 \qquad \theta=\tan^{-1}\left(\frac{\mathrm{im}}{\mathrm{re}}\right)=\tan^{-1}\infty=90^\circ$$

$$|C_{-5}|=\left|\frac{5(e^{-\pi}(-1)^{-5}+1)}{\pi(26)}\right|=\left|\frac{5e^{-\pi}}{26\pi}\right|=0.063$$

$$|C_{-4}|=\left|-\frac{(-4(-e^{-\pi}(-1)^{-4}+1))}{\pi(17)}\right|=\frac{4e^{-\pi}-4}{17\pi}=0.071$$

$$|C_{-3}|=\left|\frac{-(-3(-e^{-\pi}(-1)^{-3}+1))}{\pi((-3)^2+1)}\right|=0.0996$$

$$|C_{-2}|=\left|\frac{-(-2(-e^{-\pi}(-1)^{-2}+1))}{\pi(5)}\right|=0.1218$$

$$|C_{-1}|=\left|\frac{-(-1(-e^{-\pi}(-1)^{-1}+1))}{}\right|=0.166$$

$$|C_0|=\left|\frac{0(-e^{-\pi}(-1)^0+1))}{\pi(0^2+1)}\right|=\frac{0}{\pi}=0$$

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$$|C_1| = \left| \frac{-(1(-e^{-\pi}(-1)^1+1))}{2\pi} \right| = 0.166$$

$$|C_2| = \left| \frac{-(2(-e^{-\pi}(-1)^2+1))}{5\pi} \right| = 0.1328$$

$$|C_3| = \left| \frac{-(3(-e^{\pi}(-1)^3+1))}{10\pi} \right| = \left| \frac{-(3(e^{-\pi}+1))}{10\pi} \right| = 0.099$$

$$|C_4| = \left| \frac{-(4(-e^{-\pi}(-1)^4+1))}{17\pi} \right| = 0.071$$

$$|C_5| = \left| \frac{-(5(-e^{\pi}(-1)^5+1))}{26\pi} \right| = 0.063$$

$$|C_6| = \left| \frac{-(6(-e^{-\pi}(-1)^6+1))}{37\pi} \right| = 0.049$$