Proof for establishing that if E_8 is finite, then P_8 is zero

$$P_\infty := \lim_{T \to \infty} \left[\frac{1}{2 \cdot T} \cdot \int_{-T}^{T} \left(|x(t)| \right)^2 dt \right]$$

Since

$$E_\infty := \int_{-\infty}^{\infty} \left(|x(t)| \right)^2 dt$$

and is finite, we can define P_8 to be:

$$P_\infty := \lim_{T \to \infty} \left(\frac{1}{2 \cdot T} \cdot E_\infty \right)$$

where E_8 is a finite number. When a finite number is divided by a variable approaching infinity, the limit reaches 0. Thus, P_8 is equal to zero when E_8 is a finite number.