CT111: Introduction to Communication Systems

In-Class Quiz 2

Date: Monday 29th January, 2018

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1. Prove the following:
$$\lim_{T\to\infty} \frac{1}{T} \int_{-T/2}^{T/2} \exp\left(i2\pi ft\right)\, dt = 0$$
2. Write the equation for the *dot product* between two complex phasors $s(t) = \exp\left(i2\pi ft\right)$ and $r(t) = A\exp\left(i2\pi f_c t\right)$?
3. Evaluate the dot product between the above $s(t)$ and $r(t)$ as f varies from $-\infty$ to ∞.
4. Why is Inverse Fourier Transform called the *Synthesis* equation?
5. How can you explain Heisenberg's Uncertainty Principle using what you have learnt in the class.