## EE 703: Digital Message Transmission (Autumn 2022)

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Assignment 1: 20 points Date: August 4, 2022

- 1. [10 points] Prove the following:
  - (a)  $s_1(t) * s_2(t) \leftrightarrow S_1(f)S_2(f)$
  - (b)  $s_1(t)s_2(t) \leftrightarrow S_1(f) * S_2(f)$
- 2. [10 points] Prove Parseval's identity

$$\int_{-\infty}^{\infty} s_1(t) s_2^*(t) \ dt = \int_{-\infty}^{\infty} S_1(f) S_2^*(f) \ df$$