

Assignment H3

Deadline for submission:
Thursday , May 29th, 10:00, at the **beginning** of the lecture

Problem 1: (2 points)
Evaluate

$$\mathcal{L} \left[\int_0^t \frac{\sin \tau}{\tau} d\tau \right]$$

Problem 2: (4 points)
Calculate the following inverse Laplace transform:

$$\mathcal{L}^{-1} \left[\frac{3s + 1}{(s - 1)(s^2 + 1)} \right]$$

Problem 3: (4 points)
Prove the following equality:

$$\underbrace{\int_0^t \dots \int_0^t}_{n\text{-fold}} f(\tau) d\tau = \int_0^t \frac{(t - \tau)^{n-1}}{(n - 1)!} f(\tau) d\tau$$