# WORKSHEET 19

MATH 101

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*Problem* 1. Evaluate:

(1)

$$\int_0^1 \ln x \, dx$$

(2)

$$\int_0^{\pi/2} \frac{\sin x}{1+\cos x} \, dx$$

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(3)

$$\int_{\pi/4}^{\pi/3} \cot x \, dx$$

(4)

$$\int_0^{\pi/3} \frac{\sin x - \cos x}{\sin x + \cos x} \, dx$$

(5)

$$\int \ln(x) \frac{\sqrt{1 - (\ln x)^2}}{x} \, dx$$

(6)

$$\int_{-1}^{1} x \cos x \, dx$$

(7)

$$\int e^x \sin x \, dx$$

(8)

$$\int \cos\theta (1 - \cos\theta)^{99} \sin\theta \, d\theta$$

*Problem* 2. Determine the area between two curves

(1) $y = x^2 - 3$ and $y = 1$

(2) $y = x^2$ and $y = 3x + 4$

(3) $x = y^2$ and $x = 9$

(4) $y = x$ and $y = \sqrt{x}$