

**Homework 12**

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**Exercise 1** Compute the following integrals:

1.  $\int \frac{\ln(x)}{x} dx$

2.  $\int_0^{\sqrt{\pi/2}} x \sin(2x^2) dx$

3.  $\int_0^1 \sqrt{2-x} dx$

4.  $\int \frac{x}{(3x^2+5)^2} dx$

5.  $\int \frac{e^x}{e^x+1} dx$

6.  $\int \frac{\sin(x)}{1+\cos(x)^2} dx$

7.  $\int x^2 e^{-x} dx$

8.  $\int x^2 (\ln(x))^2 dx$

9.  $\int_1^2 \sqrt{x} \ln(x) dx$

10.  $\int \sin^3(x) dx$

11.  $\int_0^3 \sqrt{3^2-x^2} dx$      *you can use the equality  $\cos(x)^2 = \frac{1+\cos(2x)}{2}$*

12.  $\int \frac{1}{(x-2)(x-3)} dx$

13.  $\int \frac{1}{x^2+2x+3} dx$

14.  $\int \sqrt{1+x^2} dx$