8 Math101 exercises

8.1 Calculate the following indefinite integrals:

$$\int x\cos x\,dx, \qquad \int x\ln x\,dx, \qquad \int xe^x\,dx$$

8.2 Calculate the following indefinite integrals:

$$\int \cos(2x)\,dx, \qquad \int (1-x)^2\,dx, \qquad \int e^{2x-3}\,dx.$$

8.3 Calculate the following definite integrals:

$$\int_0^{2\pi} x\cos(x)\,dx, \qquad \int_{-1}^{0} xe^x\,dx, \qquad \int_1^2 x\ln(x)\,dx.$$

8.4 Calculate the following definite integrals:

$$\int_{-\frac{\pi}{9}}^{0} \sin(3x)\,dx, \qquad \int_0^2 xe^{x^2}\,dx, \qquad \int_1^2 \frac{2x+1}{x^2+x-1}\,dx.$$

8.5 Calculate the following integrals:

$$\int (x+1)\sin(x)\,dx, \qquad \int_1^3 (2x-1)e^{2x}\,dx.$$

8.6 Calculate the following definite integrals:

$$\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \cos(x)\sin^2(x)\,dx, \qquad \int_0^1 \frac{x^2}{(1+x^3)^2}\,dx$$

8.7 Calculate the following integrals:

$$\int x^2e^x\,dx, \qquad \int_0^{\pi} x^2\sin(x)\,dx$$

8.8 Calculate the following integrals:

$$\int \frac{1}{\sqrt{2x-1}}\,dx, \qquad \int_0^{\sqrt{\frac{\pi}{6}}} 6x\cos(x^2)\sqrt{\sin(x^2)}\,dx$$

8.9 Calculate the integral:

$$\int_0^{\pi} \sin(x)\cos(x)\,dx.$$