1. Evaluate the following indefinite integrals.
   a) $\int x(x+1)^2\,dx$
   b) $\int \dfrac{x\,dx}{1+x^2}$
   c) $\int \dfrac{dx}{x\ln x}$

2. Evaluate the following definite integrals.
   a) $\int_0^{\sqrt{\pi}} x\cos(x^2)\,dx$
   b) $\int_0^{\pi/4} (1+\tan x)^5 \sec^2 x\,dx$
   c) $\int_0^3 |x-1|dx$

3. Evaluate the following indefinite integrals.
   a) $\int (\sqrt[3]{x}+\sqrt{x})\,dx$
   b) $\int (x^3+1)^2\,dx$
   c) $\int xe^{x^2+1}\,dx$
   d) $\int x\sqrt[3]{x+1}\,dx$
   e) $\int (1+\sin x)^3\cos x\,dx$

4. Evaluate the following definite integrals.
   a) $\int_0^{\sqrt{\pi/4}} x\sec x^2\tan x^2\,dx$
   b) $\int_0^4 f(x)\,dx$ where $f(x)=\begin{cases} x, & x\le 1 \\ x^2, & x>1 \end{cases}$

5. Evaluate the following indefinite integrals.
   a) $\int 2xe^{x^2}\,dx$
   b) $\int (x^2+1)^2\,dx$
   c) $\int \dfrac{x^2}{1+x^3}\,dx$

6. Evaluate the following definite integrals.
   a) $\int_{-1/2}^{1} \sin \pi x \, dx$
   b) $\int_{0}^{3} x\sqrt{x+1} \, dx$
   c) $\int_{-1}^{3} |x| dx$

7. Evaluate the following indefinite integrals.
   a) $\int (x^2 - 4\sqrt{x} + 3) dx$
   b) $\int \left(\frac{x^2 - 5x + 4}{x} \right) dx$
   c) $\int \sec^2(5x) - \cos(5x) \, dx$
   d) $\int \frac{x}{\sqrt{1-x^4}} \, dx$
   e) $\int \frac{e^{2x}}{(e^{2x}+1)^3} \, dx$

8. Evaluate the following definite integrals.
   a) $\int_{0}^{\pi/2} e^{\cos x} \sin x dx$
   b) $\int_{0}^{\pi/4} \frac{\sec x \tan x}{1 + \sec x} dx$
   c) $\int_{0}^{3} |x - 1| dx$

9. Evaluate the following indefinite integrals.
   a) $\int (\sqrt[3]{x} + \sqrt{x} + \operatorname{sech}^2 x) \, dx$
   b) $\int (x^3 - 2)^2 \, dx$
   c) $\int x e^{x^2+4} \, dx$
   d) $\int x\sqrt[3]{x+1} \, dx$
   e) $\int (2 + \sin x)^3 \cos x \, dx$

10. Evaluate the following definite integrals.
    a) $\int_{0}^{\sqrt{\pi/4}} x \sec x^2 \tan x^2 \, dx$
    b) $\int_{0}^{3} f(x) \, dx$ where $f(x) = \begin{cases} x, & x \leq 1 \\ x^2, & x > 1 \end{cases}$