

Problem set 15: indefinite integrals I.

- (1) Calculate $\int \frac{5}{x} dx$.
- (2) Compute $\int a^x dx$ for $a > 0$.
- (3) Calculate $\int \sin(x) \cos(x) dx$.
- (4) Compute $\int \frac{\sin(x)}{1-\cos(x)} dx$ where it is defined.
- (5) Compute $\int \frac{1}{x \log(\log(\log(x)))} dx$.
- (6) Calculate $\int \log(x) dx$.
- (7) Give $\int \frac{1}{x^2+2x+1} dx$.
- (8) Compute $\int \frac{1}{x^2+2x+2} dx$.
- (9) Compute $\int \frac{1}{\sqrt{2-x^2}} dx$.
- (10) What is $\int \frac{1}{\sqrt{2+x^2}} dx$?
- (11) Compute $\int x^2 \sqrt{3x^3 - 3} dx$.
- (12) Give $\int 3x^2 e^{x^3} dx$.
- (13) Give the solution of $\int \frac{\log(x)}{x} dx$.
- (14) Compute $\int \frac{x}{\sqrt{1-x^4}} dx$.
- (15) Determine $\int e^x \cos(x) dx$.
- (16) What is $\int x^8 \log(x) dx$.
- (17) What is the primitive of $\log(x)^2$?
- (18) Compute $\int \frac{(x^3-1)^3}{3x^2} dx$.
- (19) Derive $\int \sqrt{a+bx} dx$.
- (20) What is $\int \frac{e^{1/x}}{x^2} dx$?