

## Indefinite integral &amp; substitution method

1. Find the indefinite integral.

(a)  $\int \left( \frac{x+1}{x} \right)^2 dx$

(b)  $\int \frac{x^2}{x^2+1} dx$

2. Use substitution method to find the integral.

(a)  $\int \cot(x) dx$

(b)  $\int \frac{x}{x^4+1} dx$

(c)  $\int x^2 \sqrt{x+1} \, dx$

(d)  $\int \frac{e^x + 1}{e^x + x} \, dx$

3. Substitution for definite integrals.

(a)  $\int_0^1 \frac{e^x + 1}{e^x + x} \, dx$

(b)  $\int_0^2 x \sqrt{4 - x^2} \, dx$

(c)  $\int_1^2 \frac{e^{1/x}}{x^2} \, dx$

(d)  $\int_0^1 \frac{1}{(1 + \sqrt{x})^2} \, dx$