

Chapter 1

Practice Problems

DATE: 2020-07-25

ANNOUNCEMENTS:

1.1 Techniques of Intigration

1.1.1 Integration by parts

Type 1

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

$$\int x^2 e^x dx.$$

$$\int x^4 \cos x dx.$$

Type 2

$$\int e^x \sin x dx.$$

$$\int \cos x \sin^2 x dx.$$

Tabular Integration

$$\int x^3 e^{2x} dx.$$

1.1.2 Trigonometric Substitution**Sine Case** $(a^2 - bx^2)^n$ **Tangent Case** $(a^2 + bx^2)^n$

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

Secant case $(bx^2 - a^2)^n$