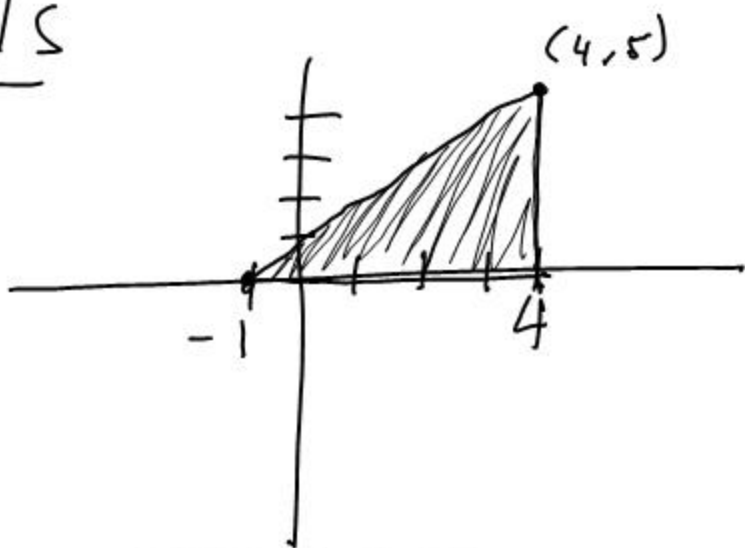
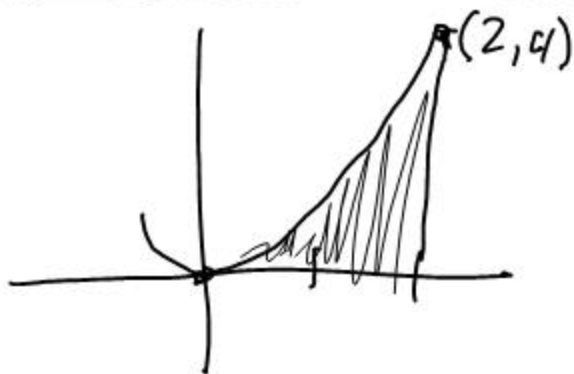


Definite Integrals

$$\int_{-1}^4 (x+1) dx = \frac{25}{2}$$



$$\int_0^2 x^2 dx = ?$$



Indefinite Integrals (Antiderivatives)

$$\int x^3 dx = \frac{1}{4} x^4 + C$$

↑ derivative ↑ function ↑ constant of integration

$$\text{Ex. } \int 5x^2 dx = \frac{5}{3}x^3 + C \leftarrow$$

Power Rule for Antiderivatives

$$\int ax^n dx = \frac{a}{n+1}x^{n+1} + C, n \neq -1$$

$$\int x^{-1} dx = \int \frac{1}{x} dx = \ln x + C$$

$$\text{Ex. } \int \frac{1}{x^3} dx = \int x^{-3} dx = \frac{1}{-2}x^{-2} + C$$

old coefficient
↓
new power

$$\text{Ex. } \int \sqrt{x} dx = \int x^{\frac{1}{2}} dx = \frac{2}{3}x^{\frac{3}{2}} + C$$

$$\int \sin x \, dx = -\cos x + C$$

$$\int \cos x \, dx = \sin x + C$$

$$\int e^x \, dx = e^x + C$$

$$\int \tan x \, dx = \underline{\hspace{10em}}$$