

GUIDED NOTES: ANTIDERIVATIVES

Vocabulary and Notation:

- Derivative: $D_x(F(x)) = f(x)$
- Antiderivative: $\int f(x) dx = F(x) + C$

Properties of Integrals:

$$\int k \cdot f(x) dx = k \cdot \int f(x) dx$$

$$\int [f(x) \pm g(x)] dx = \int f(x) dx \pm \int g(x) dx$$

Power Rule:

$$\int x^n dx =$$

$$\int 1 dx =$$

Find the general antiderivative for each of the following.

1) $f(x) = 3x^2 + 4$

2) $g(x) = 2x^2 + \pi x$

Basic Trig Functions:

$$\int \sin x \, dx =$$

$$\int \cos x \, dx =$$

Find the general antiderivative for each of the following.

3) $f(x) = \sqrt{x} - \sin x$

Anti-Chain Rule:

$$\int f(g(x)) \cdot g'(x) \, dx =$$

Evaluate each indefinite integral.

4) $\int 2(2x+1)^4 \, dx$

5) $\int (x^3 - x)\sqrt{x^4 - 2x^2} \, dx$