

## DERIVATIVE REVIEW WORKSHEET

Any calculus student must memorize basic derivative formulas and be able to use them without any error. This sheet contains the derivatives and antiderivatives of basic functions. Use the back side for practice to refresh your knowledge of derivatives.

### Derivative Formulas:

$$\frac{d}{dx}x^n = nx^{n-1} \qquad \frac{d}{dx}c = 0$$

$$\frac{d}{dx}\sqrt{x} = \frac{1}{2\sqrt{x}} \qquad \frac{d}{dx}\frac{1}{x} = -\frac{1}{x^2}$$

$$\frac{d}{dx}e^x = e^x \qquad \frac{d}{dx}a^x = a^x \ln a$$

$$\frac{d}{dx}\ln x = \frac{1}{x} \qquad \frac{d}{dx}\log_a x = \frac{1}{x \ln a}$$

$$\frac{d}{dx}\sin x = \cos x \qquad \frac{d}{dx}\cos x = -\sin x$$

$$\frac{d}{dx}\tan x = \sec^2 x \qquad \frac{d}{dx}\cot x = -\csc^2 x$$

$$\frac{d}{dx}\sec x = \sec x \tan x \qquad \frac{d}{dx}\csc x = -\csc x \cot x$$

$$\frac{d}{dx}\arctan x = \frac{1}{1+x^2} \qquad \frac{d}{dx}\arcsin x = \frac{1}{\sqrt{1-x^2}}$$

### Antiderivative Formulas:

$$\int x^n dx = \frac{1}{n+1}x^{n+1} + C \qquad \int dx = x + C$$

$$\int \frac{1}{2\sqrt{x}} dx = \sqrt{x} + C \qquad \int \frac{1}{x} dx = \ln|x| + C$$

$$\int e^x dx = e^x + C \qquad \int a^x dx = \frac{1}{\ln a}a^x + C$$

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

$$\int \sec^2 x dx = \tan x + C \qquad \int \csc^2 x dx = -\cot x + C$$

$$\int \sec x \tan x dx = \sec x + C \qquad \int \csc x \cot x dx = -\csc x + C$$

$$\int \tan x dx = \ln|\sec x| + C \qquad \int \cot x dx = \ln|\sin x| + C$$

$$\int \frac{1}{1+x^2} dx = \arctan x + C \qquad \int \frac{1}{\sqrt{1-x^2}} dx = \arcsin x + C$$

Evaluate the following derivatives without any assistance.

$$\frac{d}{dx} x^n =$$

$$\frac{d}{dx} c =$$

$$\frac{d}{dx} \sqrt{x} =$$

$$\frac{d}{dx} \frac{1}{x} =$$

$$\frac{d}{dx} e^x =$$

$$\frac{d}{dx} a^x =$$

$$\frac{d}{dx} \ln x =$$

$$\frac{d}{dx} \log_a x =$$

$$\frac{d}{dx} \sin x =$$

$$\frac{d}{dx} \cos x =$$

$$\frac{d}{dx} \tan x =$$

$$\frac{d}{dx} \cot x =$$

$$\frac{d}{dx} \sec x =$$

$$\frac{d}{dx} \csc x =$$

$$\frac{d}{dx} \arctan x =$$

$$\frac{d}{dx} \arcsin x =$$

Evaluate the following antiderivatives without any assistance.

$$\int x^n dx =$$

$$\int dx =$$

$$\int \frac{1}{2\sqrt{x}} dx =$$

$$\int \frac{1}{x} dx =$$

$$\int e^x dx =$$

$$\int a^x dx =$$

$$\int \cos x dx =$$

$$\int \sin x dx =$$

$$\int \sec^2 x dx =$$

$$\int \csc^2 x dx =$$

$$\int \sec x \tan x dx =$$

$$\int \csc x \cot x dx =$$

$$\int \tan x dx =$$

$$\int \cot x dx =$$

$$\int \frac{1}{1+x^2} dx =$$

$$\int \frac{1}{\sqrt{1-x^2}} dx =$$