

The background is a vibrant collage of various mathematical symbols and equations in different colors. It includes long division problems like  $\begin{array}{r} 25 \overline{) 5} \\ -25 \\ \hline 00 \end{array}$  and  $\begin{array}{r} 87 \overline{) 54} \end{array}$ , fractions such as  $\frac{3}{7}$  and  $\frac{1}{6}$ , and algebraic expressions like  $(2021)$  and  $(28)$ . There are also geometric shapes like triangles and squares, and various mathematical operators like  $+$ ,  $-$ ,  $\times$ , and  $\div$ .

# 12<sup>th</sup> Grade Mathematics

## *Reference Sheet*



# 12<sup>th</sup> Grade Mathematics Reference Sheet

## COMMON DERIVATIVES

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

$$\frac{d}{dx} (\sin x) = \cos x$$

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

$$\frac{d}{dx} (\tan x) = \sec^2 x$$

$$\frac{d}{dx} (\sec x) = \sec x \tan x$$

# 12<sup>th</sup> Grade Mathematics Reference Sheet

## COMMON DERIVATIVES

$$\frac{d}{dx} (\csc x) = -\csc x \cot x$$

$$\frac{d}{dx} (\cot x) = -\csc^2 x$$

$$\frac{d}{dx} (\sin^{-1} x) = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx} (\cos^{-1} x) = \frac{-1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx} (\tan^{-1} x) = \frac{1}{1+x^2}$$

# 12<sup>th</sup> Grade Mathematics Reference Sheet

## COMMON DERIVATIVES

$$\frac{d}{dx} (a^x) = a^x \ln (a)$$

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

$$\frac{d}{dx} (\ln (x)) = \frac{1}{x}, x > 0$$

$$\frac{d}{dx} (\ln |x|) = \frac{1}{x}, x \neq 0$$

$$\frac{d}{dx} (\log_a (x)) = \frac{1}{x \ln a}, x > 0$$