GDB Cheatsheet

Calculus (Differentiation)

Differentiation Rules

$$\frac{\mathrm{d}}{\mathrm{dx}}(u \pm v) = \frac{(\mathrm{du})}{\mathrm{dx}} \pm \frac{(\mathrm{dv})}{\mathrm{dx}}$$

$$\frac{\mathrm{d}}{\mathrm{dx}}(uv) = u\frac{(\mathrm{dv})}{\mathrm{dx}} + v\frac{(\mathrm{du})}{\mathrm{dx}}$$

$$\frac{\mathrm{d}}{\mathrm{dx}}\left(\frac{u}{v}\right) = \frac{v\frac{(\mathrm{du})}{\mathrm{dx}} - u\frac{(\mathrm{dv})}{\mathrm{dx}}}{v^{2}}$$

$$\frac{\mathrm{d}}{\mathrm{dx}}[cf(x)] = c * \frac{\mathrm{d}}{\mathrm{dx}}[f(x)]$$

Power & Exponential Rules

$$\frac{\mathrm{d}}{\mathrm{dx}}(x^{n}) = nx^{n-1}$$
$$\frac{\mathrm{d}}{\mathrm{dx}}(x) = 1$$
$$\frac{\mathrm{d}}{\mathrm{dx}}(c) = 0$$
$$\frac{\mathrm{d}}{\mathrm{dx}}(e^{x}) = e^{x}$$
$$\frac{\mathrm{d}}{\mathrm{dx}}(e^{\mathrm{mx}}) = me^{\mathrm{mx}}$$
$$\frac{\mathrm{d}}{\mathrm{dx}}(a^{x}) = a^{x}\ln a$$
$$\frac{\mathrm{d}}{\mathrm{dx}}(\ln x) = \frac{1}{x}$$
$$\frac{\mathrm{d}}{\mathrm{dx}}(\log_{a} x) = \frac{1}{x\ln a}$$

Trigonometric Rules

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

$\frac{\mathrm{d}}{\mathrm{dx}}(\cos x) = -\sin x$
$\frac{\mathrm{d}}{\mathrm{dx}}(\tan x) = \sec^{2} x$
$\frac{\mathrm{d}}{\mathrm{dx}}(\cot x) = -\csc^{2} x$
$\frac{\mathrm{d}}{\mathrm{dx}}(\sec x) = \sec x \tan x$
$\frac{\mathrm{d}}{\mathrm{dx}}(\csc x) = -\csc x \cot x$

Inverse Trigonometric Rules

$\frac{\mathrm{d}}{\mathrm{dx}}(\sin^{-} १x) = \frac{१}{\sqrt{१-x^{२}}}$
$\frac{\mathrm{d}}{\mathrm{dx}}(\cos^{-} १x) = -\frac{१}{\sqrt{१-x^{२}}}$
$\frac{\mathrm{d}}{\mathrm{dx}}(\tan^{-} १x) = \frac{१}{१+x^{२}}$
$\frac{\mathrm{d}}{\mathrm{dx}}(\cot^{-} १x) = -\frac{१}{१+x^{२}}$
$\frac{\mathrm{d}}{\mathrm{dx}}(\sec^{-} १x) = \frac{१}{|x|\sqrt{x^{२}-१}}$
$\frac{\mathrm{d}}{\mathrm{dx}}(\csc^{-} १x) = -\frac{१}{|x|\sqrt{x^{२}-१}}$