Source: [KBhMATH401SubIndex]

1 | Derivatives

=> Instantaneous rate of change at a particular point

• Average rate of change = $\frac{\Delta Y}{\Delta X}$

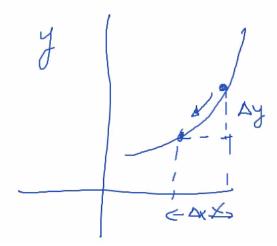


Figure 1: rateofchange.png

• Instantaneous rate of change = $\lim_{\Delta x \to 0} \frac{\Delta Y}{\Delta X}$

Derivative of $f(x) \Rightarrow \frac{dy}{dx}$

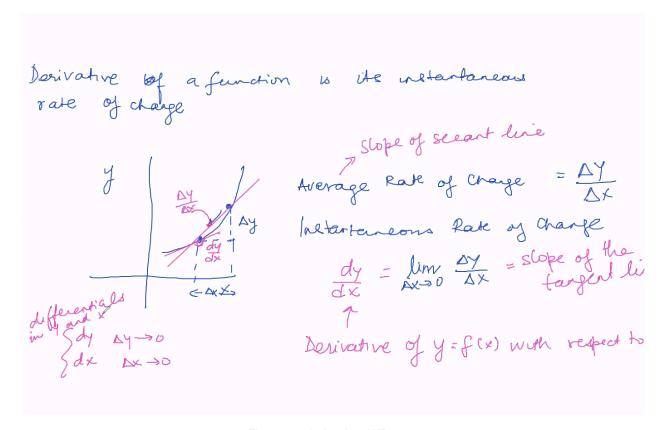


Figure 2: derivativesWB.png

1.1 | Useful Table of Derivatives

f(x)	f'(x)
$\overline{x^2}$	2x
x^3	$3x^2$
x^n	nx^{n-1}
$\frac{1}{x}$	$\frac{-1}{x^2}$
\sqrt{x}	$\frac{1}{2\sqrt{x}}$
$\sin(x)$	$\cos(x)$
$\cos(x)$	$-\sin(x)$
tan(x)	$1 + \tan^2(x)$
$\cot(x)$	$-\csc^2(x)$
sec(x)	$\tan(x)\sec(x)$
$\csc(x)$	$-\cot(x)\csc(x)$
e^x	e^x
ln(x)	$\frac{1}{x}$
a^x	$a^x ln(a)$
$log_a(x)$	$\frac{1}{xln(a)}$

f(x)	f'(x)
$f^{-}1(x)$	$\frac{1}{f'(f^-1(x))}$
$sin^-1(x)$	\$\