Nature Table

x	-1	2	5	
f'(x)	+	0	-	
	↗	Max	↘	

Leibniz Notation

$$\frac{dy}{dx} = f'(x)$$

Equation of tangent line

Straight Line Theory

Gradient at a point

f'(x)=0
Stationary Pts
Max. / Mini Pts
Inflection Pt

Graphs
f'(x)=0

Derivative
= gradient
= rate of change

Differentiation of Polynomials

$$f(x) = x^{\frac{1}{2}}(2x-1)$$

$$f(x) = 2x^{\frac{3}{2}} - x^{\frac{1}{2}}$$

$$f'(x) = 3x^{\frac{1}{2}} - \frac{1}{2}x^{\frac{-1}{2}}$$

$$f'(x) = 3x^{\frac{1}{2}} - \frac{1}{2\sqrt{x}}$$

$f(x) = ax^n$
then $f'x) = anx^{n-1}$

$$f(x) = \frac{2}{3\sqrt[4]{x^5}}$$

$$f(x) = \frac{2x^{\frac{-5}{4}}}{3}$$

$$f'(x) = \frac{-\frac{5}{2}x^{\frac{-9}{4}}}{3} = \frac{-5}{6\sqrt[4]{x^9}}$$