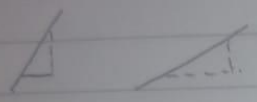
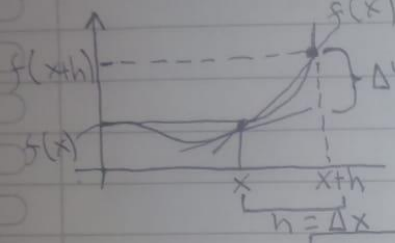
No. :

Date :

# Differensial (Turunan)



$$\text{Gradien} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$




$$\frac{\Delta y}{\Delta x} = \frac{f(x+h) - f(x)}{h}$$

$$\boxed{\frac{dy}{dx} = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}} \rightarrow \text{Definisi turunan}$$

Turunan $f(x) \Rightarrow \boxed{f'(x),\ \frac{dy}{dx},\ D_x y} \rightarrow$ notasi turunan

Contoh

$f(x) = 3x^2 + 5$, $f'(x) =$

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - F(x)}{h}$$

$$= \lim_{h \to 0} \frac{3(x+h)^2 + 5 - (3x^2 + 5)}{h}$$

$$= \lim_{h \to 0} \frac{3(x^2 + 2hx + h^2) + 5 - 3x^2 - 5}{h}$$

$$= \lim_{h \to 0} \frac{3x^2 + 6hx + 3h^2 + 5 - 3x^2 - 5}{h}$$

$$= \lim_{h \to 0} 6x + 3h = 6x$$

## Aturan perkalian dan pembagian

$$(uv)' = u'v + uv'$$

$$\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2}$$

## Aturan Rantai

$$[f(g(x))]' = f'(g(x)) \cdot g'(x)$$