

Turunan tingkat tinggi

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1) Turunan pertama,

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

2) Turunan kedua,

$$f''(x) = \frac{d^2 f(x)}{dx^2}$$

3) Turunan ketiga,

$$f'''(x) = \frac{d^3 f(x)}{dx^3}$$

...

4) Turunan ke-n,

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

$$y = x^4 - 2x \rightarrow \left. \begin{aligned} y' &= 4x^3 - 2 \\ y'' &= 12x^2 \end{aligned} \right\}$$

$$y''' = 24x \leftarrow$$

A. Tentukan turunan kedua dari

1. $y = \sin(2x-1) \rightarrow u(x) = 2x-1 \rightarrow y = \sin u(x)$

2. $y = (2x-3)^4 \quad u'(x) = 2 \rightarrow y' = \cos(u(x)) \cdot u'(x)$

3. $y = \frac{x}{x+1} \quad = \cos(2x-1) \cdot 2$

4. $y = \cos^2(\pi x) \quad = 2 \cos(2x-1)$

B. Tentukan nilai c sehingga $f''(c) = 0$ bila $f(x) = x^3 + 3x^2 - 45x - 6$

C. Tentukan nilai a, b dan c dari $g(x) = ax^2 + bx + c$ bila $g(1) = 5$,
 $g'(1) = 3$ dan $g''(1) = -4$

$$y'' = ?$$

$$y' = 2 \cos(2x-1)$$

$$u(x) = 2x-1 \rightarrow u'(x) = 2$$

$$y' = 2 \cos u(x)$$

$$y'' = -2 \sin u(x) \cdot u'(x)$$

$$= -2 \sin(2x-1) \cdot 2$$

$$y'' = -4 \sin(2x-1)$$