



Kegiatan Belajar 8

Tugas 8



SMA NEGERI 1 BEBANDEM

2021

Turunan fungsi Trigonometri (dalil rantai)

Rumus sudut rangkap

$$\sin 2\alpha = 2 \sin \alpha \cdot \cos \alpha$$

$$\cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha$$

Contoh soal

Tentukan turunan pertama dari fungsi $y = 2 \cos^3(x^2 + 3x - 3)$

Jawab

$$y = \cos^3(x^2 + 3x - 3) \text{ maka}$$

$$y' = 6 \cos^2(x^2 + 3x - 3) \cdot -\sin(x^2 + 3x - 3) \cdot (2x + 3)$$

$$y' = -6 (2x + 3) \cdot \cos^2(x^2 + 3x - 3) \cdot \sin(x^2 + 3x - 3)$$

$$y' = -3 (2x + 3) \cdot \cos(x^2 + 3x - 3) \cdot 2 \cos(x^2 + 3x - 3) \sin(x^2 + 3x - 3)$$

$$y' = -3 (2x + 3) \cdot \sin 2(x^2 + 3x - 3) \cdot 2 \cos(x^2 + 3x - 3)$$

$$y' = -3 (2x + 3) \cdot \sin(2x^2 + 6x - 6) \cdot 2 \cos(x^2 + 3x - 3)$$

Latihan soal

Tentukan turunan pertama dari fungsi berikut:

1. $y = \cos^3 2x + \sin^3 2x$

Jawab

$$y = \cos^3 2x + \sin^3 2x$$

$$y' = \dots \cos^{\dots} 2x \dots 2x \dots + \dots \sin^{\dots} 2x \dots 2x \dots$$

$$y' = \dots \cos^{\dots} 2x \dots 2x + \dots \sin^{\dots} 2x \dots 2x$$

$$y' = \dots \dots \cos 2x \dots 2x \cdot \cos 2x + \dots \dots \sin 2x \dots 2x \cdot \sin 2x$$

$$y' = \dots \sin \dots \cdot \cos 2x + \dots \sin \dots \cdot \sin 2x$$

$$y' = \dots \sin \dots (\cos \dots - \dots 2x)$$

Soal Pengayaan

Tentukan turunan pertama dari fungsi berikut:

2. $y = \sin^4(3 - 2x) \cdot \cos(3 - 2x)$

Jawab

$y = \sin^4(3 - 2x) \cdot \cos(3 - 2x)$ maka

$$y' = \dots \sin^{\dots}(3 - 2x) \cdot \dots (3 - 2x) \dots \cos(3 - 2x) \dots \sin^4(3 - 2x) \cdot \dots (3 - 2x)$$

$$y' = \dots \sin^{\dots}(3 - 2x) \cdot \cos^{\dots}(3 - 2x) \dots \sin^{\dots}(3 - 2x).$$

$$y' = \dots \sin^{\dots}(3 - 2x) \cdot (\dots \cos^{\dots}(3 - 2x) \dots \sin^{\dots}(3 - 2x)).$$