

LEMBAR KERJA PESERTA DIDIK 2

Turunan Fungsi Trigonometri

A. Perhatikan kembali materi dalam video ini



B. kerjakan soal dibawah ini!

1. Tentukan turunan fungsi trigonometri berikut.

$$f(x) = 2x \cos x - x^3$$

Penyelesaian:

$$y = 2x \cos x - x^3$$

Untuk $2x \cdot \cos x$ dimisalkan:

$$u = 2x \rightarrow u' = 2$$

$$v = \cos x \rightarrow v' =$$

Jadi,

$$y' = 2 \cdot + 2x \cdot$$

$$y' =$$

$$\sin \frac{\pi}{3} \cdot \cos^2 \frac{\pi}{3}$$

$$-\sin x$$

$$\frac{1}{2}\sqrt{3} - 4$$

$$-12 \cdot \left(\frac{1}{2}\sqrt{3}\right) \cdot \left(\frac{1}{2}\right)^2$$

$$\cos x$$

$$\frac{1}{2}\sqrt{3} - 1$$

$$-\frac{2}{3}\sqrt{3}$$

$$\left(\frac{1}{2}\sqrt{2}\right)^2$$

$$\left(\sin\left(\frac{1}{4}\pi\right)\right)^2$$

$$3\cos^2\left(\frac{1}{4}\pi\right)$$

$$\sec^2 x$$

$$2\cos x - 2x\sin x - 3x^2$$

$$4 \cdot 3 \cos^2 x$$

$$(-\sin x) - 3x^2$$

$$\sin \frac{\pi}{3} - \sec^2$$

$$3 \cdot \cos x \cdot (\cos x) + 3 \sin x (-\sin x)$$

$$0$$

2. Tentukan $f'(x)$ dan nilai $f'(x)$ dari fungsi $f(x) = 3x - \cos x + \tan x$ untuk $x = \frac{\pi}{3}$.

Penyelesaian:

$$f(x) = 3x - \cos x + \tan x$$

$$f'(x) = 3 + \sin x - \boxed{}$$

$$f'\left(\frac{\pi}{3}\right) = 3 + \boxed{}$$

$$= 3 + \boxed{}$$

$$= \boxed{}$$

$$\sin \frac{\pi}{3} \cdot \cos^2 \frac{\pi}{3}$$

$$-\sin x$$

$$\frac{1}{2}\sqrt{3} - 4$$

$$-12 \cdot \left(\frac{1}{2}\sqrt{3}\right) \cdot \left(\frac{1}{2}\right)^2$$

$$\cos x$$

$$\frac{1}{2}\sqrt{3} - 1$$

$$-\frac{2}{3}\sqrt{3}$$

$$\left(\frac{1}{2}\sqrt{2}\right)^2$$

$$\left(\sin\left(\frac{1}{4}\pi\right)\right)^2$$

$$3\cos^2\left(\frac{1}{4}\pi\right)$$

$$\sec^2 x$$

$$2\cos x - 2x\sin x - 3x^2$$

$$4.3 \cos^2 x$$

$$(-\sin x) - 3x^2$$

$$\sin \frac{\pi}{3} - \sec^2$$

$$0$$

$$3 \cdot \cos x \cdot (\cos x) + 3 \sin x (-\sin x)$$

3. Jika $f(x) = 4 \cos^3 x$, maka tentukan nilai $f'(x)$ untuk $x = \frac{\pi}{3}$

Penyelesaian

$$f(x) = 4 \cos^3 x$$

$$f'(x) = \boxed{} \cdot (-\sin x)$$

$$f'(x) = -12 \cdot \sin x \cdot \cos^2 x$$

$$f'\left(\frac{\pi}{3}\right) = -12 \cdot \boxed{}$$

$$f'\left(\frac{\pi}{3}\right) = \boxed{}$$

$$f'\left(\frac{\pi}{3}\right) = \boxed{}$$

$$\sin \frac{\pi}{3} \cdot \cos^2 \frac{\pi}{3}$$

$$-\sin x$$

$$\frac{1}{2}\sqrt{3} - 4$$

$$-12 \cdot \left(\frac{1}{2}\sqrt{3}\right) \cdot \left(\frac{1}{2}\right)^2$$

$$\cos x$$

$$\frac{1}{2}\sqrt{3} - 1$$

$$-\frac{3}{2}\sqrt{3}$$

$$\left(\frac{1}{2}\sqrt{2}\right)^2$$

$$\left(\sin\left(\frac{1}{4}\pi\right)\right)^2$$

$$3\cos^2\left(\frac{1}{4}\pi\right)$$

$$\sec^2 x$$

$$2\cos x - 2x\sin x - 3x^2$$

$$4.3 \cos^2 x$$

$$(-\sin x) - 3x^2$$

$$\sin \frac{\pi}{3} - \sec^2$$

$$0$$

$$3 \cdot \cos x \cdot (\cos x) + 3 \sin x (-\sin x)$$

4. Jika $f(x) = 3 \cdot \sin x \cdot \cos x$, maka tentukan nilai $f'(\frac{1}{4}\pi)$

Penyelesaian

$$U = 3 \sin x$$

$$U' = 3 \cos x$$

$$V = \cos x$$

$$V' = -\sin x$$

$$f'(x) = U'V + UV'$$

$$f(x) = 3 \cdot \sin x \cdot \cos x$$

$$f'(x) =$$

$$f'(x) = 3 \cos^2 x - 3 \sin^2 x$$

Substitusikan $x = \frac{1}{4}\pi$, maka

$$f'(\frac{1}{4}\pi) = -3 \sin^2(\frac{1}{4}\pi)$$

$$f'(\frac{1}{4}\pi) = 3 \left[\cos^2(\frac{1}{4}\pi) - \right]$$

$$f'(\frac{1}{4}\pi) = 3 \left[-(\frac{1}{2}\sqrt{2})^2 \right]$$

$$f'(\frac{1}{4}\pi) =$$

$$-\sin x$$

$$\frac{1}{2}\sqrt{3} - 4$$

$$\cos x$$

$$\frac{1}{2}\sqrt{3} - 1$$

$$(\sin(\frac{1}{4}\pi))^2$$

$$3 \cos^2(\frac{1}{4}\pi)$$

$$2 \cos x - 2x \sin x - 3x^2$$

$$(-\sin x) - 3x^2$$

$$\sin \frac{\pi}{3} - \sec^2$$

$$(\frac{1}{2}\sqrt{2})^2$$

$$0$$

$$\sin \frac{\pi}{3} \cdot \cos^2 \frac{\pi}{3}$$

$$-12 \cdot (\frac{1}{2}\sqrt{3}) \cdot (\frac{1}{2})^2$$

$$-\frac{2}{3}\sqrt{3}$$

$$\sec^2 x$$

$$4.3 \cos^2 x$$

$$3 \cdot \cos x \cdot (\cos x) + 3 \sin x (-\sin x)$$