

Latihan Soal Dan Pembahasan

Mata Ujian : Matematika



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Pembahasan Soal

Disusun oleh : Team fk.ujiantulis.com

1. Jawab D

Pembahasan :

Turunan	Integral
3x	Cos2x
3	$\frac{1}{2} \sin 2x$
0	$-\frac{1}{4} \cos 2x$

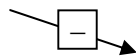
$$\int 3x \cos 2x \, dx = \frac{3}{2} x \sin 2x + \frac{3}{4} \cos 2x + C$$

2. Jawab C

Pembahasan :

Hasil dari $16 \int (x + 3) \cos 2x \, dx = \dots$

Turunan	Integral
16x + 48	cos2x
16	$\frac{1}{2} \sin 2x$
	1



$$(8x + 24) \sin 2x + 4 \cos 2x + C$$

3. Jawab: E

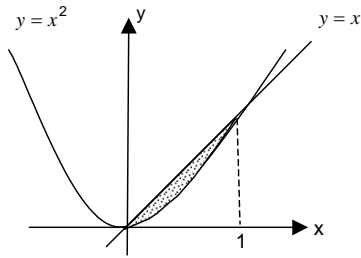
Pembahasan :

Tentukan batas integral:

$$\begin{aligned} x^2 = x &\Rightarrow x^2 - x = 0 \\ &\Rightarrow x(x - 1) = 0 \\ &\Rightarrow x_1 = 0 \quad ; \quad x_2 = 1 \end{aligned}$$

jadi,

$$\begin{aligned} V &= \pi \int_0^1 [(x^2)^2 - (x^2)^2] dx \\ &= \pi \int_0^1 (x^2 - x^4) dx \\ &= \pi \left(\frac{1}{3} x^3 - \frac{1}{5} x^5 \right) \Big|_0^1 \\ &= \pi \left(\frac{1}{3} - \frac{1}{5} \right) \\ &= \frac{2\pi}{15} \end{aligned}$$



4. Jawab: B
Pembahasan :

Misalkan $u = 3x^2 - 6x + 7$

$$\frac{du}{dx} = 6x - 6$$

$$(x - 1) dx = \frac{1}{6} du$$

$$(9x - 9) dx = \frac{3}{2} du$$

$$\text{Batas: } x = 1 \rightarrow u = 4$$

$$x = 3 \rightarrow u = 16$$

$$\int_1^3 (9x - 9) \sqrt{3x^2 - 6x + 7} dx$$

$$= \frac{3}{2} \int_4^{16} \sqrt{u} du$$

$$= u \sqrt{u} \Big|_4^{16}$$

$$= 64 - 8 = 56$$

5. Jawab : A
Pembahasan :

$$2 \cos A \sin B = \sin(A + B) - \sin(A - B)$$

$$\cos A \sin B = \frac{1}{2} \sin(A + B) - \frac{1}{2} \sin(A - B)$$

$$\int \cos 3x \sin x dx$$

$$= \int \left(\frac{1}{2} \sin 4x - \frac{1}{2} \sin 2x \right) dx$$

$$= -\frac{1}{8} \cos 4x + \frac{1}{4} \cos 2x + C$$