

**KUNCI UN MATEMATIKA SMA IPA
PAKET 4**

1. **Jawaban: B**

Pembahasan:

$$v = 6t^2 - 8t + 6$$

$$t = 4 \text{ maka } s = 16$$

$$s = \int (6t^2 - 8t + 6) dt = 2t^3 - 4t^2 + 6t + C$$

$$96 = 2(4)^3 - 4(4)^2 + 6(4) + C$$

$$96 = 2(64) - 64 + 24 + C$$

$$96 = 128 - 40 + C$$

$$C = 8$$

$$s = 2t^3 - 4t^2 + 6t - 8$$

$$s_{(2)} = 2(2)^3 - 4(2)^2 + 6(2) - 8$$

$$= 16 - 16 + 12 - 8$$

$$= 4 \text{ m}$$

2. **Jawaban: A**

Pembahasan:

$$\int_1^2 \frac{dx}{x^3} = \int_1^2 x^{-3} dx = \left[\frac{1}{-2} x^{-2} \right]_1^2$$

$$= \left(-\frac{1}{2} (2)^{-2} \right) - \left(-\frac{1}{2} (1)^{-2} \right) = -\frac{1}{8} + \frac{1}{2} = \frac{-1+4}{8} = \frac{3}{8}$$

3. **Jawaban: D**

Pembahasan:

$$\int \sin^5 x \cos^2 x dx$$

$$\text{Substitusikan } \sin^2 x = 1 - \cos^2 x$$

$$\int (\sin^2 x)^2 \sin x \cos^2 x dx = \int (1 - \cos^2 x)^2 \sin x \cos^2 x dx$$

$$= \int \cos^2 x \sin x - 2\cos^4 x \sin x + \cos^6 x dx = -\frac{1}{3} \cos^3 x + \frac{2}{5} \cos^5 x - \frac{1}{7} \cos^7 x + C$$

4. **Jawaban: E**

Pembahasan:

$$L = L1 + L2$$

$$L1 = - \int_{-1}^1 x^3 - 1 dx = - \left. \frac{1}{4} x^4 + x \right|_{-1}^1$$

$$= \left\{ -\frac{1}{4} (1)^4 + (1) \right\} - \left\{ -\frac{1}{4} (-1)^4 + (-1) \right\} = -\frac{1}{4} + 1 + \frac{1}{4} + 1 = 2$$

$$L2 = \int_1^2 x^3 - 1 dx = \left. \frac{1}{4} x^4 - x \right|_1^2 =$$

$$= \left\{ \frac{1}{4} (2)^4 - (2) \right\} - \left\{ \frac{1}{4} (1)^4 - (1) \right\} = 4 - 2 - \frac{1}{4} + 1 = 2\frac{3}{4}$$

$$L = 2 + 2\frac{3}{4} = 4\frac{3}{4}$$

5. **Jawaban: D**
Pembahasan:

$$V = \pi \int_0^4 (\sqrt{y})^2 - \left(\frac{1}{2}\sqrt{y}\right)^2 dy = \pi \int_0^4 y - \frac{1}{4} y dy = \pi \int_0^4 \frac{3}{4} y dy = \pi \left[\frac{3}{8} y^2 \right]_0^4 = 6\pi$$

6. **Jawaban: D**
Pembahasan:

Data	f_i	x_i	$f_i x_i$	\bar{X}	$x_i - \bar{X}$	$ x_i - \bar{X} ^2$	$f_i x_i - \bar{X} ^2$
50 - 59	8	54,5	439	73,5	-19	361	2.888
60 - 69	10	64,5	645		-9	81	810
70 - 79	16	74,5	1.192		1	1	16
80 - 89	11	84,5	929,5		11	121	1.331
90 - 99	5	94,5	472,5		21	441	2.205
Σ	50		3.675				7.250

$$\bar{X} = \frac{3.675}{50} = 73,50$$

$$SD = \sqrt{\frac{7.250}{50}} = \sqrt{145} = 12,042$$

Jadi, SD = 12, 042 dan variasinya adalah $SD^2 = (12,042)^2 = 145$

7. **Jawaban: A**
Pembahasan:

Mata pelajaran yang disukai	Banyak siswa	Perhitungan	Besar sudut Pusat
Matematika	30	$\frac{30}{80} \times 360^\circ$	135
Bahasa Inggris	16	$\frac{16}{80} \times 360^\circ$	72
Olahraga	20	$\frac{20}{80} \times 360^\circ$	90
Fisika	10	$\frac{10}{80} \times 360^\circ$	45
Geografi	4	$\frac{4}{80} \times 360^\circ$	18

8. **Jawaban: A**
Pembahasan:

kotak I : kurang dari 5.000, yaitu 2, 3, 4 = 3 buah

kotak II : 4 (5 - 1 = 4)

kotak III : 3

kotak IV : 2

I II III IV

3 4 3 2

3 . 4 . 3 . 2 = 72

9. **Jawaban: B**
Pembahasan:

Banyak kemungkinan susunan staf pengurus:

$${}_{12}P_3 = \frac{12!}{(12-3)!} = \frac{12 \cdot 11 \cdot 10 \cdot 9!}{9!} = 1320$$

10. **Jawaban: C**

Pembahasan:

$$P(M) = \frac{n(M)}{n(S)} = \frac{5}{8} = 0,625$$