

# Latihan Soal Dan Pembahasan

Mata Ujian : Matematika



@Sipencatar.com

Latihan untuk Sipencatar :

STPI Curug

[@Sipencatar.com](https://www.sipencatar.com)

Untuk Persiapan Ujian Tulis

Oleh Team [Sipencatar.com](https://www.sipencatar.com)



# Pembahasan Soal

Disusun oleh : Team [Sipencatar.com](http://Sipencatar.com)

1. **Jawab B**

**Pembahasan :**

fungsi kuadrat memotong sumbu X di  $(-4,0)$  &  $(3,0)$

$$y = a(x - x_1)(x - x_2)$$

$$y = a(x - 3)(x + 4)$$

Melalui  $(0, -12)$

$$-12 = a(0 - 3)(0 + 4)$$

$$-12 = -12a$$

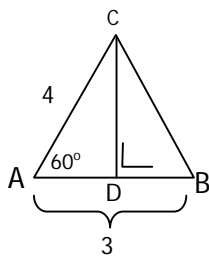
$$a = 1$$

$$y = 1 \cdot (x - 3)(x + 4)$$

$$y = x^2 + x - 12$$

2. **Jawab E**

**Pembahasan :**



$$\sin 60^\circ = \frac{CD}{AC}$$

$$CD = AC \cdot \sin 60^\circ$$

$$= 4 \cdot \frac{1}{2}\sqrt{3}$$

$$= 2\sqrt{3}$$

3. **Jawab E**

**Pembahasan :**

Berat Badan	f	f
kumulatif		
50 - 52	4	4
53 - 55	5	9

Kelas median: Pada urutan ke  $\frac{1}{2}n = ke-10$

Berarti kelas interval 56 – 58

Tb = tepi bawah = 55,5

C = panjang interval kelas =  $(52 - 50) + 1 = 3$

$f_{\text{kumseb}}$  = frekuensi kumulatif kelas sebelumnya = 9

$$\begin{aligned}\text{Median} &= Tb + c \frac{\frac{1}{2}n - f_{\text{kumseb}}}{f_{\text{kelas}}} \\ &= 55,5 + 3 \cdot \frac{10 - 9}{3} \\ &= 56,5\end{aligned}$$

4. Jawab:

Tinggi badan	f	Kode
150–154	3	-2
155–159	6	-1
160–164	9	0
165–169	8	1
170–174	4	2

$\overline{X}_s$  = Rata-rata sementara

= tengah-tengah kelas yang kodenya 0

= 162

$$\overline{X}_{\text{kode}} = \frac{-6 - 6 + 0 + 8 + 8}{3 + 6 + 9 + 8 + 4} = \frac{4}{30} = \frac{2}{15}$$

Rata-rata =  $\overline{X}_s + c \overline{X}_{\text{kode}}$

$$= 162 + 5 \cdot \frac{2}{15}$$

$$= 162,7$$

5. **Jawab D**

**Pembahasan :**

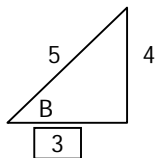
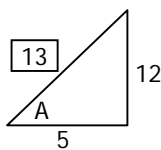
$$\begin{aligned} \text{Peluang} &= \frac{\text{Banyak kejadian}}{\text{semesta}} = \frac{C_3^7 \cdot C_1^5}{C_4^{12}} \\ &= \frac{\frac{7!}{4! \cdot 3!} \cdot \frac{5!}{4! \cdot 1!}}{\frac{12!}{8! \cdot 4!}} = \frac{7 \cdot 6 \cdot 5 \cdot 4! \cdot 5}{4! \cdot 3 \cdot 2 \cdot 1 \cdot 1!} \\ &= \frac{7 \cdot 5 \cdot 5}{\frac{11 \cdot 10 \cdot 9}{2}} = \frac{35}{99} \end{aligned}$$

6. **Jawab A**

**Pembahasan :**

$$\text{tg } A = \frac{12}{5}$$

$$\sin B = \frac{4}{5}$$



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

$$\begin{aligned} &= \frac{5}{13} \cdot \frac{3}{5} + \frac{12}{13} \cdot \frac{4}{5} \\ &= \frac{63}{65} \end{aligned}$$

7. **Jawab A**

**Pembahasan :**

$$\begin{aligned} \frac{\sin 81^\circ + \sin 21^\circ}{\sin 69^\circ - \sin 171^\circ} &= \frac{2 \sin\left(\frac{81+21}{2}\right) \cdot \cos\left(\frac{81-21}{2}\right)}{2 \cos\left(\frac{69+171}{2}\right) \cdot \sin\left(\frac{69-171}{2}\right)} \\ &= \frac{2 \sin(51) \cdot \cos(30)}{2 \cos(120) \cdot \sin(-51)} \\ &= \frac{2 \sin(51) \cdot \frac{1}{2} \sqrt{3} \cos(30)}{2 \cdot \left(-\frac{1}{2}\right) \cdot (-\sin(51))} \\ &= \sqrt{3} \end{aligned}$$

8. **Jawab B**

**Pembahasan :**

$$\sin x^\circ - \sqrt{3} \cos x^\circ = 1$$

$$k \cos (x - \alpha) = 1$$

Dengan:  $k = \sqrt{(-\sqrt{3})^2 + 1^2} = 2$

$$\operatorname{tg} \alpha = \frac{\sin}{\cos} = \frac{1}{-\sqrt{3}} = -\frac{1}{3}\sqrt{3}$$

sin positif }  $\Rightarrow$  Kuadran II  $\Rightarrow \alpha = 150$

cos negatif

Diperoleh:  $2 \cos(x - 150) = 1$

$$\cos(x - 150) = \frac{1}{2}$$

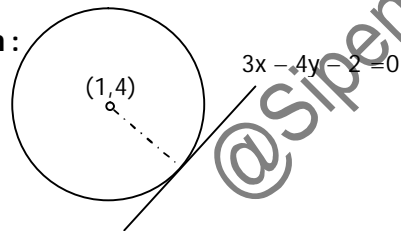
$$\cos(x - 150) = \cos 60$$

$$x - 150 = \pm 60 + k 360$$

$$x = 90 + k 360 \quad \parallel \quad x = 210 + k 360$$

9. **Jawab D**

**Pembahasan :**



Jari-jari R = Jarak titik (1, 4) ke garis  $3x - 4y - 2 = 0$

$$= \frac{|Ax_1 + By_1 + C|}{\sqrt{A^2 + B^2}}$$

$$= \frac{|3 \cdot 1 - 4 \cdot 4 - 2|}{\sqrt{3^2 + (-4)^2}}$$

$$= \frac{15}{5} = 3$$

Persamaan lingkaran:  $(x - x_p)^2 + (y - y_p)^2 = R^2$

$$(x - 1)^2 + (y - 4)^2 = 3^2$$

$$x^2 - 2x + 1 + y^2 - 8y + 16 = 9$$

$$x^2 + y^2 - 2x - 8y + 8 = 0$$

10. **Jawab D**

**Pembahasan :**

$$f(x) = 2x^2 - 2 \text{ dan } g(x) = \frac{1}{2}x + 2$$

$$(f \circ g)(x) = f(g(x))$$

$$= g\left(\frac{1}{2}x + 2\right)$$

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

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

$$= \frac{1}{2}x^2 + 4x + 6$$

@Sipencatar.com