

# Pembahasan Latihan Soal

## TKDU – Matematika Dasar



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### Latihan TKDU Memuat materi :

- 1) Kemampuan Matematika Dasar
- 2) Kemampuan Bahasa Indonesia
- 3) Kemampuan Bahasa Inggris

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Untuk Persiapan Ujian Tulis

[Sbmptn 2018](http://ujiantulis.com)

Oleh Team [UjianTulis.com](http://ujiantulis.com)

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## Pembahasan Soal

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

1 **Jawab: A**

$$\sim p \Rightarrow q = \sim(\sim p) \vee q = p \vee q$$

2 **Jawab: E**

Datanya: 15, x, 50, y, 90

$$\bar{X} = \frac{15 + x + 50 + y + 90}{5}$$

$$\bar{X}_{\min} = \frac{15 + 15 + 50 + 50 + 90}{5} = 44$$

$$\bar{X}_{\max} = \frac{15 + 50 + 50 + 90 + 90}{5} = 59$$

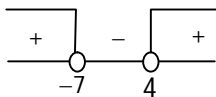
$$44 \leq \bar{X} \leq 59$$

3 **Jawab: C**

$$\begin{aligned} &\geq \frac{x^2 - 3x + 1}{x^2 + 3x - 28} \leq \frac{-2}{x - 4} \\ &\geq \frac{x^2 - 3x + 1}{x^2 + 3x - 28} + \frac{2}{x - 4} \leq 0 \\ &\geq \frac{x^2 - 3x + 1}{x^2 + 3x - 28} + \frac{2(x + 7)}{(x - 4)(x + 7)} \leq 0 \\ &\geq \frac{x^2 - 3x + 1}{x^2 + 3x - 28} + \frac{2x + 14}{x^2 + 3x - 28} \leq 0 \\ &\geq \frac{x^2 - x + 15}{x^2 + 3x - 28} \geq 0 \end{aligned}$$

$D = 1 - 60$   
 $= -59$   
 definit (+)

$$\frac{(+)}{(x + 7)(x - 4)} \geq 0$$



Bilangan bulat pada interval  $-10 \leq x \leq 10$ , yang memenuhi adalah ...

$$\begin{aligned} &= -10 + (-9) + (-8) + 5 + 6 + 7 + 8 + 9 \\ &= 8 \end{aligned}$$

4 **Jawab: D**

Diketahui  $f^{-1}(x + 1) = \frac{2x - 7}{3x + 7}$

Maka  $f^{-1}(x) \circ (x + 1) = \frac{2x - 7}{3x + 7}$

Diperoleh

$$\begin{aligned}
 f^{-1}(x) &= \frac{2x-7}{3x+7} \circ \text{invers}(x+1) \\
 &= \frac{2x-7}{3x+7} \circ (x-1) \\
 &= \frac{2(x-1)-7}{3(x-1)+7} \\
 &= \frac{2x-9}{3x+4}
 \end{aligned}$$

Diketahui  $f(3x+4) = -1$ , maka

$$3x+4 = f^{-1}(-1) = \frac{-2-9}{-3+4} = -11$$

$$3x = -15$$

$$x = -5$$

5 **Jawab: B**

$x^2 - 3x + m = 0$  adalah  $\alpha$  dan  $\beta$

$$\alpha^2\beta + \beta^2\alpha = -18$$

$$\alpha\beta(\alpha + \beta) = -18$$

$$m \cdot 3 = -18$$

$$m = -6$$

$$\begin{aligned}
 \alpha^3 + \beta^3 &= (\alpha + \beta)^3 - 3\alpha\beta(\alpha + \beta) \\
 &= 3^3 - 3 \cdot (-6) \cdot 3 \\
 &= 81
 \end{aligned}$$

6 **Jawab: D**

$f(x) = ax^2 + 6x + a$ , nilai maksimum 8

$$\text{Nilai maksimum } 3 \Rightarrow \frac{D}{-4a} = 8$$

(...,3)



$$\Rightarrow \frac{36 - 4a^2}{-4a} = 8$$

$$\Rightarrow 4a^2 - 32a - 36 = 0$$

$$\Rightarrow a^2 - 8a - 9 = 0$$

$$\Rightarrow (a-9)(a+1) = 0$$

Karena grafik membuka kebawah  $\Rightarrow a < 0$

$$\Rightarrow a = -1$$

Sehingga sumbu simetrinya adalah  $x = \frac{-b}{2a} = 2$

7 **Jawab: B**

$$2^{x+7} \cdot 4^{x-3} = 250 \quad 2^{3x} \cdot 2 = 250$$

$$2^{x+7} \cdot 2^{2x-6} = 250 \quad 2^{3x} = 125$$

$$2^{x+7+2x-6} = 250 \quad 2^{3x} = 5^3$$

$$2^{3x+1} = 250 \quad 2^x = 5$$

Dengan demikian

$$4^{-x} = (2^x)^{-2} = 5^{-2} = \frac{1}{25}$$

8 **Jawab: C**

$$\log A = 0,222... = \frac{2}{9}$$

$$\log B = 0,333... = \frac{3}{9}$$

$$\begin{aligned} \log\left(\frac{A^3}{\sqrt[3]{B}}\right) &= \log A^3 - \log \sqrt[3]{B} \\ &= 3 \log A - \frac{1}{3} \log B \\ &= 3 \log A - \frac{1}{3} \log B \\ &= \frac{6}{9} - \frac{1}{9} \\ &= \frac{5}{9} \\ &= 0,555... \end{aligned}$$

9 **Jawab: D**

$$\begin{aligned} &\lim_{x \rightarrow 2} \left( \left( \frac{x^2 - 2x}{x - 2} - 2 \right) \left( \frac{x^2 - 4}{x^2 - 4x + 4} \right) \right) \\ &= \lim_{x \rightarrow 2} \left( \left( \frac{x(x - 2)}{x - 2} - 2 \right) \left( \frac{(x - 2)(x + 2)}{(x - 2)^2} \right) \right) \\ &= \lim_{x \rightarrow 2} \left( (x - 2) \left( \frac{x + 2}{x - 2} \right) \right) \\ &= \lim_{x \rightarrow 2} (x + 2) \\ &= 4 \end{aligned}$$

10 **Jawab: A**

Barisan aritmatika

$$-12, q, r, s, t, u, 60, \dots, x, y, 552$$

$$\begin{aligned} U_7 = 60 &\rightarrow a + 6b = 60 \\ -12 + 6b &= 60 \\ 6b &= 72 \\ b &= 12 \end{aligned}$$

$$u = 60 - b = 60 - 12 = 48$$

$$x = 552 - 2b = 552 - 24 = 528$$

$$x - u = 528 - 48 = 480$$

11 **Jawab: E**

$${}^3 \log x + {}^9 \log x + {}^{81} \log x + \dots = 10$$

$$a = {}^3 \log x$$

$$r = \frac{U_2}{U_1} = \frac{{}^9 \log x}{{}^3 \log x} = \frac{\frac{1}{2} \cdot {}^3 \log x}{{}^3 \log x} = \frac{1}{2}$$

$$S_{\infty} = 10$$

$$\frac{a}{1-r} = 10$$

$$\frac{{}^3\log x}{1-\frac{1}{2}} = 10$$

$${}^3\log x = 5$$

$$x = 3^5 = 243$$

12 **Jawab: B**

$$f(2x-5) = 4x^3 + 5x^2 - 6x + 11$$

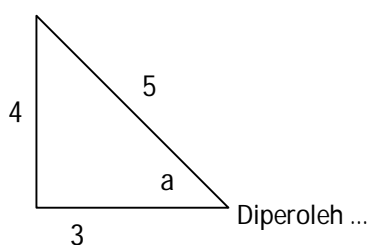
————— turunkan

$$2f'(2x-5) = 12x^2 + 10x - 6$$

$$f'(2x-5) = 6x^2 + 5x - 3$$

13 **Jawab: A**

$$\tan a = \frac{4}{3} \text{ dan } \pi < a < \frac{3}{2}\pi$$



a kuadran III

$$\sin = (-)$$

$$\cos = (-)$$

$$\sin a = -\frac{4}{5}$$

$$\cos a = -\frac{3}{5}$$

$$\sin\left(\frac{\pi}{2} + a\right) = \cos a = -\frac{3}{5}$$

$$\cos\left(\frac{\pi}{2} + a\right) = -\sin a = -\left(-\frac{4}{5}\right) = \frac{4}{5}$$

$$\text{JAA} = \text{Jumlah akar-akar} = -\frac{3}{5} + \frac{4}{5} = \frac{1}{5}$$

$$\text{KAA} = \text{Kali akar-akar} = \left(-\frac{3}{5}\right) \cdot \frac{4}{5} = -\frac{12}{25}$$

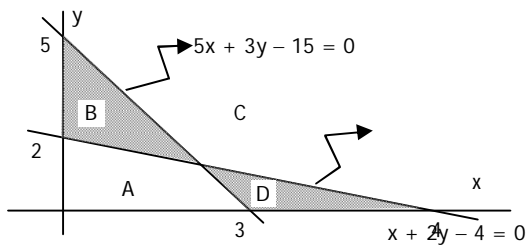
$$x^2 - \text{JAA}x + \text{KAA} = 0$$

$$x^2 - \frac{1}{5}x - \frac{12}{25} = 0$$

$$25x^2 - 5x - 12 = 0$$

14 Jawab: E

Yang diarsir kuadran I berarti  $x \geq 0, y \geq 0$



Daerah	$5x + 3y - 15$	$x + 2y - 4$	$(2x + y - 4)(x + 2y - 4)$
A	$\leq 0$	$\leq 0$	$\geq 0$
B	$\leq 0$	$> 0$	$< 0$

Jadi daerah diarsir (daerah B dan D) memenuhi

$$x \geq 0, y \geq 0$$

$$(5x + 3y - 15)(x + 2y - 4) \leq 0$$

15 Jawab: E

$$C_2^{10} = \frac{10!}{8! \cdot 3!} = \frac{10 \cdot 9 \cdot \cancel{8!}}{\cancel{8!} \cdot 2 \cdot 1} = 45$$