

PEMBAHASAN SELEKSI NASIONAL MASUK PERGURUAN TINGGI NEGERI (SNMPTN)

Mata Pelajaran : Matematika Dasar

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Kode Soal : 323

1. Jawab: D

Eksponen

$$a^b = 20^{20} - 2^{19} = 2^{19}(2 - 1) = 2^{19}$$

$$a = 2 \quad b = 19$$

$$a + b = 21$$

2. Jawab: A

Sistem Persamaan Linear

$$2x + y = 3$$

$$2y + z = 5$$

$$2z + x = 7 +$$

$$3x + 3y + 3z = 15$$

$$x + y + z = 5$$

3. Jawab: D

Persamaan Kuadrat

$$x_1 = p - 1 \quad x_2 = p + 1$$

$$x^2 - 4x + a = 0$$

$$x_1 + x_2 = -\frac{b}{a}$$

$$2p = 4 \rightarrow p = 2$$

$$x_1 = 1 \quad x_2 = 3$$

$$x_1 x_2 = a$$

$$1 \cdot 3 = a \rightarrow a = 3$$

4. Jawab: B

Logaritma

$${}^3\log a = 2 \rightarrow a = 3^2 = 9$$

$$({}^2\log a)({}^a\log b) = 2$$

$${}^2\log b = 2 \rightarrow b = 2^2 = 4$$

$$a + b = 13$$

5. Jawab: E

Fungsi Kuadrat

$$\text{Puncak } (\alpha, \beta) \rightarrow y - \beta = a(x - \alpha)^2$$

$$\text{Puncak } (2, -1) \Rightarrow y + 1 = a(x - 2)^2$$

$$\text{Melalui } (0, -5) \Rightarrow -5 + 1 = a(0 - 2)^2$$

$$-4 = 4a$$

$$a = -1$$

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

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

$$y = -x^2 + 4x - 5$$

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

$$f(5) = -25 + 20 - 5 = -10$$

6. Jawab: E

Matriks

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix} \begin{pmatrix} 1 & 2 \\ 1 & 5 \end{pmatrix} = \begin{pmatrix} 1 & 1 \\ 3 & 2 \end{pmatrix}$$

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix} = \frac{1}{1 \cdot 5 - 2 \cdot 1} \begin{pmatrix} 1 & 1 \\ 3 & 2 \end{pmatrix} \begin{pmatrix} 5 & -2 \\ -1 & 1 \end{pmatrix}$$

$$= \frac{1}{3} \begin{pmatrix} 5 - 1 & -2 + 1 \\ 15 - 2 & -6 + 2 \end{pmatrix}$$

$$= \begin{pmatrix} \frac{4}{3} & -\frac{1}{3} \\ \frac{13}{3} & -\frac{4}{3} \end{pmatrix}$$

$$a + b + c + d = \frac{4}{3} - \frac{1}{3} + \frac{13}{3} - \frac{4}{3} = 4$$

7. Jawab: A

Statistika

$$f_{k7} = 19 \quad f_{k8} = 22 \quad f_k = 25$$

$$\frac{f_{k8} - f_{k7}}{f_k} \cdot 100\% = \frac{3}{25} \cdot 100\%$$

$$= 12\%$$

8. **Jawab: C**

Deret Aritmatika

$$a = 1001$$

$$b = 997 - 1001 = -4$$

$$U_n < 0$$

$$a + (n-1)b < 0$$

$$1001 + (n-1)(-4) < 0$$

$$1001 - 4n + 4 < 0$$

$$-4n < -1005$$

$$4n > 1005$$

$$n > 251\frac{1}{4}$$

$$n = 252$$

9. **Jawab: E**

Fungsi

$$f(x) = 2x + b$$

$$f^{-1}(9) = 3$$

$$\text{maka } f(3) = 3$$

$$6 + b = 9$$

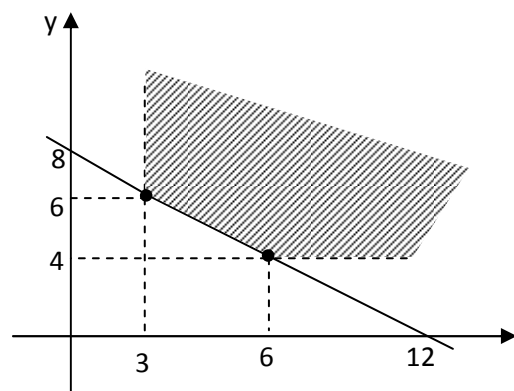
$$b = 3$$

$$f(x) = 2x + 3$$

$$f(f(3)) = f(9) = 21$$

10. **Jawab: D**

Program Linear



$$f(x, y) = 3x + 4y$$

$$f(3, 6) = 9 + 24 = 33$$

$$f(6, 4) = 18 + 16 = 34$$

$$f_{\min} = 33$$

11. **Jawab: B**

Statistika

$$n_1 = 9 \quad \bar{x}_1 = 61$$

$$n_2 = 1 \quad \bar{x}_2 = \dots$$

$$\bar{x} = 63,5$$

$$\bar{x} = \frac{n_1 \bar{x}_1 + n_2 \bar{x}_2}{n_1 + n_2}$$

$$63,5 = \frac{9 \cdot 61 + \bar{x}_2}{10}$$

$$635 = 549 + \bar{x}_2$$

$$\bar{x}_2 = 86$$

12. **Jawab: D**

Aritmetika Sosial

$$\text{Sewa} = 15.000.000$$

$$\text{Banyak barang} = 3.000$$

$$\text{Bahan baku} = 2.000$$

$$\begin{aligned} \text{Biaya bahan baku total} &= 3.000 \times 2.000 \\ &= 6.000.000 \end{aligned}$$

$$\text{Modal} = \text{biaya} + \text{bahan baku}$$

$$= 15.000.000 + 6.000.000$$

$$= 21.000.000$$

$$\text{Harga penjualan minimum agar tidak rugi}$$

$$= \frac{21.000.000}{3.000} = 7.000$$

13. **Jawab: A**

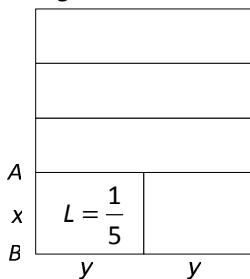
Deret Geometri

$$S_n = 3(2 - 2^{1-n})$$

$$a = S_1 = 3(2 - 2^0) = 3$$

$$r = 2^{-1} = \frac{1}{2}$$

$$a + 2r = 3 + 1 = 4$$

14. **Jawab: B***Bidang Datar*

$$xy = \frac{1}{5} \rightarrow y = \frac{1}{5x}$$

$$2y = 1$$

$$\frac{2}{5x} = 1 \rightarrow x = \frac{2}{5}$$

15. **Jawab: C***Pertidaksamaan*

$$(x+5)(x-3) < x-3$$

$$x^2 + 2x - 15 < x - 3$$

$$x^2 + x - 12 < 0$$

$$(x+4)(x-3) < 0$$

