



Matematik Tambahan

Modul berfokus

Indeks dan Logaritma



KERTAS 1

1. Selesaikan
Solve

$$8^x = \frac{1}{32}$$

[2 m / Aras R]

2. Selesaikan persamaan
Solve the equation

$$16^{x-1} = 8^{x+3}$$

[2m/ Aras R]

3. Selesaikan persamaan
Solve the equation

$$4^{2x} = \frac{1}{8}$$

[2 m / Aras R]

4. Selesaikan
Solve

$$27^{4x} = 81^{2x+5}$$

[2 m / Aras R]

5. Selesaikan persamaan
Solve the equation

$$32^{3x} = 4^{7x+4}$$

[2 m / Aras R]

6. Selesaikan persamaan
Solve the equation

$$3^{2x-1} = 5^x$$

[4 m / Aras S]

7. Selesaikan persamaan
Solve the equation

$$16^{5x} = 4^{9x-6}$$

[2 m / Aras R]

8. Selesaikan persamaan
Solve the equation

$$27^{3x+3} = \frac{1}{\sqrt{9^{x-3}}}$$

[3 m / Aras R]

9. Selesaikan persamaan
Solve the equation
 $2^{2x+1} - 13(2^x) - 24 = 0$
[4 m /Aras S]
10. Diberi $\log_3 K - \log_9 L = 2$, ungkapkan K dalam sebutan L
Given that $\log_3 K - \log_9 L = 2$, express K in terms of L .
[4 m /Aras S]
11. Diberi $\log_p 3 = r$ dan $\log_p 7 = s$, ungkapkan $\log_p \left(\frac{49p}{27} \right)$ dalam sebutan r dan s .
Given that $\log_p 3 = r$ and $\log_p 7 = s$, express $\log_p \left(\frac{49p}{27} \right)$ in terms of r and s .
[4 m /Aras S]
12. Diberi $\log_5 2 = q$ dan $\log_5 9 = p$, ungkapkan $\log_5 8.1$ dalam sebutan q dan p
Given that $\log_5 2 = q$ and $\log_5 9 = p$, express $\log_5 8.1$ in terms of q and p .
[4 m /Aras S]
13. Selesaikan persamaan
Solve the equation
 $3 + \log_3(2x - 1) = \log_3 x$.
[3 m /Aras S]
14. Diberi $\log_x 2 = p$ dan $\log_x 7 = q$, ungkapkan $\log_x \left(\frac{56}{x^2} \right)$ dalam sebutan p dan q .
Given that $\log_x 2 = p$ and $\log_x 7 = q$, express $\log_x \left(\frac{56}{x^2} \right)$ in terms of p and q .
[4 m /Aras S]
15. Diberi $\log_3 mn = 3 + 2\log_3 m - \log_3 n$, ungkapkan m dalam sebutan n .
Given that $\log_3 mn = 3 + 2\log_3 m - \log_3 n$ express m in terms of n .
[4 m /Aras S]
16. Diberi $\log_9 y = \log_3 18$, cari nilai y .
Given that $\log_9 y = \log_3 18$, find the value of y .
[3 m /Aras S]

17. Diberi $\log_3 m = v$ dan $\log_3 n = w$, ungkapkan $\log_9 \left(\frac{81m}{n} \right)$ dalam sebutan v dan w .

Given that $\log_3 m = v$ and $\log_3 n = w$, express $\log_9 \left(\frac{81m}{n} \right)$ in terms of v and w .

[4 m / Aras S]

18. Selesaikan persamaan

Solve the equation

$$\log_3 x - \log_3 (4x + 1) = -2.$$

[3 m / Aras S]

19. Sesaikan persamaan

Solve the equation

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

[3 m / Aras S]

20. Selesaikan

Solve

$$81^{4x} = 27^{2x+5}$$

[3 m / Aras R]

21. Selesaikan persamaan

Solve the equation

$$3(5^{3x+1}) = 36$$

[3m / Aras T]

22. Nilaikan

Evaluate

$$8^{\frac{2}{3}} \times 16^{\frac{-3}{4}} \div 4^{\frac{3}{2}}$$

[3 m / Aras R]

23. Selesaikan persamaan

Solve the equation

$$2^{x+4} - 2^{x+3} = 1$$

[3 m / Aras R]

24. Permudahkan

Simplify

$$\frac{3^{n+2} \times 9^{n+3}}{27^{n+3}}$$

[3 m / Aras R]

25. Selesaikan persamaan

Solve the equation

$$3^{x^2} - 9^{6-2x} = 0$$

[3 m / Aras S]

26. Selesaikan
- $27^t = 9(3^{t-1})$
- , cari nilai
- t
- .

Solve $27^t = 9(3^{t-1})$, find the value of t .

[3 m / Aras R]

27. Jika
- $\log_m 3 = p$
- dan
- $\log_m 5 = q$
- , nyatakan dalam sebutan
- p
- dan/ atau
- q

If $\log_m 3 = p$ and $\log_m 5 = q$, state in terms of p and/or q

(a) $\log_m 125$

(b) $\log_{15} 135$

[4 m / Aras S]

28. Diberi
- $p = 3^r$
- dan
- $q = 3^s$
- , ungkapkan dalam sebutan
- r
- dan
- s

Given $p = 3^r$ and $q = 3^s$, state in term of r and s

(a) $\log_3 \left(\frac{pq}{27} \right)$

(b) $\log_{27} p + \log_{81} q$

[4 m / Aras S]

KERTAS 2

1. Diberi $\log_2 15 = 3.9069$ dan $\log_2\left(\frac{5}{3}\right) = 0.7370$, tanpa menggunakan kalkulator saintifik atau jadual empat angka, carikan nilai,

Given $\log_2 15 = 3.9069$ and $\log_2\left(\frac{5}{3}\right) = 0.7370$, without using scientific calculator or four digit table, find the value

- (a) $\log_2 3$,
- (b) Seterusnya, cari nilai bagi $\log_{\sqrt{2}} 37.5$
Hence, find the value of $\log_{\sqrt{2}} 37.5$

[5 m / Aras T]

2. (a) Diberi $\log_8 n = \frac{1}{3}$, cari nilai n

Given that $\log_8 n = \frac{1}{3}$, find the value of n. [1m/Aras R]

- (c) Diberi $2^r = 3^s = 6^t$, ungkapkan t dalam sebutan r dan s
Given that $2^r = 3^s = 6^t$, express t in terms of r and s . [4 m / Aras S]

- (d) Diberi $y = kx^m$ dengan keadaan k dan m ialah pemalar, $y = 4$ apabila $x = 2$ dan $y = 8$ apabila $x = 5$, cari nilai k dan m .
Given that $y = kx^m$ where k and m are constants. $y = 4$ when $x = 2$ and $y = 8$ when $x = 5$, find the values of k and m . [5 m / Aras T]

3. (a) Selesaikan persamaan
Solve the equation

$$\log_3 x = \log_9 (x + 6) \quad [3 m / Aras S]$$

- (e) Diberi $\log_7 x^3 y = 5 - 2(\log_7 x + 2\log_7 y)$, dengan keadaan x dan y ialah integer positif. Ungkapkan y dalam sebutan x .
Given $\log_7 x^3 y = 5 - 2(\log_7 x + 2\log_7 y)$ such that x and y are positive interger Express y in term of x .

[4 m / Aras S]

4. Selesaikan persamaan
Solve the equations

(a) $2^{2x+3} = 30 + 2^x$

(b) $\log_2 5\sqrt{x} + \log_4 16x = 6$

[7 m / Aras T]

5. Nilai sebuah rumah meningkat sebanyak 5% pada setiap awal tahun daripada harga asal. Jika nilai rumah itu bermula dengan RM90 000, selepas t tahun, didapati nilainya RM p , diberi oleh $p = 90000(1.05)^t$.

The value of a house increases by 5% at the beginning of each year. If the initial value of the house is RM90 000, the value of the house after t years, RM p , is given by $p = 90000(1.05)^t$.

Cari

Find

- (a) nilai rumah itu selepas 6.5 tahun,
the value of the house after 6.5 years

- (b) bilangan tahun minimum untuk nilai rumah itu melebihi RM150 000.
minimum number of years for the value of the house to be more than RM150 000

[5 m / Aras T]

6. Selesaikan persamaan serentak
Solve the simultaneous equations

$$\log_9 y = 1 + \log_3 x$$

$$9^x = 3^y$$

[7 m / Aras T]

7. Selesaikan persamaan
Solve the equation

$$\log_2(x+5) + \log_4(5-x)^2 = 2 + \log_8\left(\frac{9}{4}\right)^3$$

[5 m / Aras T]

8. (a) Diberi $y = 3^x$, ungkapkan $3^{2x-1} - 3^{x+1}$ dalam sebutan y .
Given $y = 3^x$, express $3^{2x-1} - 3^{x+1}$ in terms of y .

[3 m / Aras S]

- (a) Seterusnya, selesaikan persamaan $3^{2x-1} - 3^{x+1} + 6 = 0$.
Hence or other wise, solve the equation $3^{2x-1} - 3^{x+1} + 6 = 0$ [5 m / Aras T]

9. (a) Ungkapkan $\log_3(2x+1) - 5\log_9x^2 + 4\log_3x$ sebagai logaritma tunggal.
Express $\log_3(2x+1) - 5\log_9x^2 + 4\log_3x$ as a single logarithm.

[4 m / Aras S]

- (b) Seterusnya selesaikan persamaan
Hence, solve the following equation
 $\log_3(2x+1) - 5\log_9x^2 + 4\log_3x = 3$

[2 m / Aras S]

10. (a) Diberi $\log_2 xy = 2 + 3\log_2 x - \log_2 y$. Ungkapkan y dalam sebutan x .
Given that $\log_2 xy = 2 + 3\log_2 x - \log_2 y$. Express y in terms of x .
[4 m / Aras S]
- (c) Selesaikan persamaan $2 + \log_3(x-1) = \log_3 x$.
Solve the equation $2 + \log_3(x-1) = \log_3 x$.
[3 m / Aras S]

JAWAPAN : MODUL 5 : BAB : INDEKS DAN LOGARITMA**KERTAS 1**

1. $x = -\frac{5}{3}$

2. $x = 13$

3. $x = -\frac{3}{4}$

4. $x = 5$

5. $x = 8$

6. $x = 1.8695$

7. $x = -6$

8. $x = -\frac{3}{5}$

9. $x = 3$

10. $K = 9\sqrt{L}$

11. $2s+1-3r$

12. $2p-q-1$

13. $x = \frac{27}{53}$

14. $q+3p-2$

15. $m = \frac{n^2}{27}$

16. $y = 324$

17. $\frac{1}{2}(4+v-w)$

18. $x = \frac{1}{5}$

19. $x = -1$

20. $x = \frac{3}{2}$

21. $x = 0.1813$

22. $\frac{1}{16}$

23. $x = -3$

24. $\frac{1}{3}$

25. $x = -6,2$

26. $t = \frac{1}{2}$

27. (a) $3q$

(b) $\frac{3p+q}{p+q}$

28. (a) $r+s-3$

(b) $\frac{r}{3} + \frac{s}{4}$

KERTAS 2

1. (a) 1.585
(b) 10.458
2. (a) 2
(b) $t = \frac{rs}{s+r}$
(c) $m = 0.7565$, $k = 2.368$
3. (a) $x = 3$
(b) $y = \frac{7}{x}$
4. (a) $x = 1$
(b) $x = 16/5$
5. (a) 120 608.61
(b) 11 tahun
6. $x = \frac{2}{9}$, $y = \frac{4}{9}$
7. $x = \pm 4$
8. (a) $\frac{1}{3}y^2 - 3y$
(b) $x = 1$ or 1.631
9. (a) $\log_3 \frac{2x+1}{x}$
(b) $1/25$
10. (a) $y = 2x$
(b) $x = \frac{9}{8}$