



Logarithms (1)

QUESTION 1 Complete:

- a If $\log_a x = c$ then $x =$ _____
- b $\log_a xy = \log_a x +$ _____
- c $\log_a \frac{x}{y}$ _____
- d $\log_a a =$ _____
- e $\log_a 1 =$ _____
- f $\log_a x^n =$ _____

QUESTION 2 Express as an integer:

- | | | | |
|---------------|------------------------|----------------|----------------|
| a $\log_3 27$ | b $\log_2 32$ | c $\log_5 5$ | d $\log_7 1$ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| e $\log_6 36$ | f $\log_{10} 100\ 000$ | g $\log_7 343$ | h $\log_2 256$ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

QUESTION 3 Simplify:

- | | | |
|-------------------------------------|--------------------------------------|--------------------------------|
| a $\log_6 2 + \log_6 3$ | b $\log_2 18 - \log_2 9$ | c $\log_2 \sqrt{2}$ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| d $\log_5 20 + \log_5 2 - \log_5 8$ | e $\log_3 504 - \log_3 7 - \log_3 8$ | f $\frac{\log_a 16}{\log_a 4}$ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

QUESTION 4 Express as a single logarithm:

- | | | |
|-----------------------------|-------------------------------------|---------------------------|
| a $3 \log_a 2 + 2 \log_a 3$ | b $\log_m 12 + \log_m 4 - \log_m 8$ | c $4 \log_n 3 - \log_n 9$ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

Logarithmic and exponential functions

Logarithms (2)

QUESTION 1 Complete: If $y = a^x$ then $x =$ _____

QUESTION 2 Use a calculator to find the value, correct to three decimal places, of:

a $\log_{10}17$

b $\log_{10}205$

c $\log_{10}0.35$

d $\log_{10}1.65$

QUESTION 3 If $a^{2.37} = 10$, find:

a \log_a10

b $\log_a10\ 000$

c $\log_a0.01$

QUESTION 4 If $\log_m2 = 0.289$ and $\log_m5 = 0.671$, evaluate:

a \log_m10

b \log_m8

c $\log_m2.5$

d $\log_m12.5$

QUESTION 5 Find the value of x if:

a $\log_315 + \log_3x = \log_35$

b $\log_2x - \log_27 = 3$

Page 97 1 a a^c b $\log_a y$ c $\log_a x - \log_a y$ d 1 e 0 f $n \log_a x$ 2 a 3 b 5 c 1 d 0 e 2 f 5 g 3 h 8 3 a 1 b 1 c $\frac{1}{2}$
d 1 e 2 f 2 4 a $\log_a 72$ b $\log_m 6$ c $\log_n 9$

Page 98 1 $\log_a y$ 2 a 1.230 b 2.312 c -0.456 d 0.217 3 a 2.37 b 9.48 c -4.74 4 a 0.96 b 0.867 c 0.382 d 1.053

5 a $x = \frac{1}{3}$ b $x = 56$