

Logarithm laws

1

a $\log_8 x + \log_8 y$

c $\log p + \log q - \log r$

e $6(\log 7 + \log x)$

g $-(\log 2 + \log x)$

i $\log 5 - \log x$

k $\log 7 - 6 \log x$

m $\frac{2}{3}(\log 14 + \log x)$

o $\log v + \log v$

b $\log_3 7 - \log_3 11$

d $-\log x - \log y$

f $\log 7 + 4 \log x$

h $\log 7 - \log 2$

j $-7 \log 3 - 7 \log x$

l $\log 5 + \frac{2}{3} \log x$

n $2 \log c - \frac{1}{2} \log d$

2

a $7 \log_4 y$

b $6 \log_8 x$

c $4 \log x$

d $6 \log (x + 7)$

e $6 \log (2x + 5)$

f $-5 \log_a B$

g $-\log (2x + 3)$

h $-8 \log (4x + 3)$

i $\frac{1}{5} \log x$

j $\frac{1}{2} \log_5 y$

k $\frac{1}{3} \log (5x + 9)$

3

a $\log 84$

b $\log_{10} 165$

c $\log_{10} 2$

d $\log_{10} 6$

e $\log_{10} \left(\frac{1}{4} \right)$

f $\log_{10} \left(\frac{6}{7} \right)$

g $5 \log_{10} 18$

h $3 \log_{10} 2$

i $3 \log_{10} 2$

j $-35 \log_{10} 5$

4

a $7 \log x$

b $\log (x^6 y^5)$

c $\log \left(\frac{x^8}{y^{\frac{1}{2}}} \right)$

d $\log \left(\frac{x^6}{y} \right)$

e $6 \log x$

f $2 + \log xy$

5

a $10^3 = 1000$

b $10^{\frac{1}{2}} = \sqrt{10}$

c $10^{-3} = \frac{1}{1000}$

d $10^{-\frac{1}{2}} = \frac{1}{\sqrt{10}}$

6

a $\log_{10} 10\,000 = 4$

b $\log_{10} \left(\frac{1}{1000} \right) = -3$

c $\log_{10} (\sqrt{10}) = \frac{1}{2}$

d $\log_{10} \left(\frac{1}{\sqrt{10}} \right) = -\frac{1}{2}$

7

a 5

b 2

c 2

d 3

e 2

8

a 5

b 2

c 9

d -2

9 $\log 2 + \log u - \log 3 - \log v$

10

a $3 \log u + 5 \log v$

b $\frac{1}{3} \log v - \frac{1}{2} \log u$