

Find the value of each of the following, giving your answer as an integer

a.  $\log_4 16$

b.  $\log_4 2 + \log_4 32$

c.  $\log_4 8 - \log_4 32$

a.

$$a^x = b \Leftrightarrow x = \log_a b$$

$$\log_4 16 = x \Leftrightarrow 4^x = 16$$

$$x = 2$$

b.

$$\log a + \log b = \log ab$$

$$\log_4 2 + \log_4 32 = \log_4 2 \times 32$$

$$= \log_4 64$$

$$= 3$$

c.

$$\log \frac{a}{b} = \log a - \log b$$

$$\log_4 8 - \log_4 32 = \log_4 \frac{8}{32}$$

$$= \log_4 \frac{1}{4}$$

$$= -1$$