

Exercise 5.5.61 Write as a single logarithm:

$$\log_4(x^2-1) - 5\log_4(x+1).$$

Solution

we have

$$\log_4(x^2-1) - 5\log_4(x+1) = \log_4(x^2-1) - \log_4((x+1)^5)$$

by Theorem 5.5, A(5)

$$= \boxed{\log_4\left(\frac{x^2-1}{(x+1)^5}\right)} \quad \text{by Theorem 5.5, A(4).}$$

□