

§ 9.2 対数関数

問題 9.2.1

(1)
$$\log_3(27 + 54) = \log_3 81 = \log_3 3^4 = 4 .$$

(2)
$$\log_2 8 + 24 = \log_2 2^3 + 24 = 3 + 24 = 27 .$$

問題 9.2.2

(1)
$$\log_2 \frac{1}{32} = \log_2 \frac{1}{2^5} = \log_2 2^{-5} = -5 .$$

(2)
$$\log_3(9\sqrt{3}) = \log_3\left(3^2 3^{\frac{1}{2}}\right) = \log_3 3^{\frac{5}{2}} = \frac{5}{2} .$$

問題 9.2.3

(1)
$$2^{3+\log_2 5} = 2^3 \cdot 2^{\log_2 5} = 8 \cdot 5 = 40 .$$

(2)
$$5^{4\log_5 3} = \left(5^{\log_5 3}\right)^4 = 3^4 = 81 .$$

問題 9.2.4 $g(x) = \log_3 x$. (1) $g(23) = \log_3 23$. (2) $g(81) = \log_3 81 = \log_3 3^4 = 4$.

(3) $g\left(\frac{1}{27}\right) = \log_3 \frac{1}{27} = \log_3 3^{-3} = -3$.