

# Exercises — Logarithms and exponential functions

1. Simplify  $10^{\log_{10} 6}$ .
2. If  $\log_4(x) = \frac{5}{2}$ , what is  $x$ ?
3. Simplify  $\log_5(5)$ .
4. Simplify  $e^{\ln(7)}$ .
5. Write  $\log_3(x+2) + 2\log_3(x) - \log_3(2)$  as a single logarithm.
6. If  $\log_a(\frac{8}{27}) = 3$ , what is  $a$ ?
7. Solve the equation for  $x$ .
  - (a)  $9^x = 12$
  - (b)  $7^{2x-1} = 7^{x+2}$
  - (c)  $4^{2x-1} = 3^{x+2}$
  - (d)  $e^{x^2} = 100$
  - (e)  $5 = 2(3 - e^x)$
  - (f)  $\log_x(x+6) - \log_x(x+2) = \log_x(x)$
  - (g)  $(\log_{10}(x))^2 = \log_{10}(x^2)$