

Week 4: Exponentials and Logarithms

Try these exercises now, do not use a calculator, and try to solve the exercises without help

1. Simplify the expression $\frac{(5a^m)^2 a^2}{(a^3)^2}$
2. Use a calculator to evaluate (a) e^1 (b) e^5 (c) e^{-5} (d) e^0
3. Calculate the values of the functions $\cosh(x) = \frac{e^x + e^{-x}}{2}$ and $\sinh(x) = \frac{e^x - e^{-x}}{2}$ for $x = 1, 0$ and -1
4. Rewrite (a) $y = a^b$ in terms of logarithms, and (b) $\log_x(y) = p$ in exponential form
5. Which of the following expressions are equivalent?
 $a = x^b$ $b = x^a$ $x = a^b$ $\log_x(a) = b$ $\log_a(x) = b$ $\log_x(b) = a$
6. Write $\ln(c) = d$ in exponential form.
7. Simplify (without using a calculator) $\log_{10}\left(\frac{1}{10}\right) - \log_{10}\left(\frac{10}{27}\right) + \log_{10}(1000)$
8. Simplify (without using a calculator) $2 \ln(3) + \ln(4) - 2 \ln(6)$
9. Simplify $a^{\log_a x}$ and $e^{\ln x}$
10. Solve for n by taking logs of both sides of the equation $1.04^n = 2$