1.5 Exponents and logarithms

Checklist

What you should know

By the end of this subtopic you should be able to:

- know and apply the exponent rules:

$$a^m \times a^n = a^{m+n}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

$$(a^m)^n = a^{m \times n}$$

$$(ab)^m = a^m b^m$$

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

$$a^{-m} = \frac{1}{a^m}$$

$$a^0 = 1$$

- use exponent rules to simplify expressions and rewrite them with positive exponents
- recognise that exponential equations in the form $a^x = b$ are equivalent to $\log_a b = x$ in logarithmic form for $a > 0$, $b > 0$, $a \neq 1$
- rewrite exponential equations in logarithmic form and logarithmic equations in exponential form
- interpret $\log a$ as $\log_{10} a$ and $\ln a$ as $\log_e a$
- evaluate logarithms to base 10 and base e on the calculator.