

### Why use this resource?

This is a set of equations designed to help students think about what fractional and negative indices mean, and when they are and are not defined. The first four equations are 'indices rules' that they are likely to look at and assume they are correct. Students need to see that they are not true for all values of  $x$  and  $y$  so care needs to be taken when applying them. The second four equations are not so obviously correct and they offer practice at manipulating indices while applying what they have learned from the first four questions.

### Key questions

Many of the problems are not defined when there is a zero or negatives involved, so questions such as

- Have you thought about what happens when  $x$  is zero?
- Have you thought about what happens when  $x$  is negative?

may be useful.

### Possible support

You may wish to only give the first four questions initially, so students can develop their familiarity at what values can and cannot appear when cube rooting etc.

Highlighting that the square root symbol and raising something to the power of  $\frac{1}{2}$  denotes the principal root (discussed more in the **Solutions**) may help students understand what values some of the expressions can and cannot take.