

5. By rationalising the denominator, express each of the following in its simplest form.

(ii) $\frac{12}{3 - \sqrt{2}}$

Remember...
When dividing by a Compound Surd
multiply above and below
by its conjugate

Remember...
Conjugate of
(a + √b) is (a - √b)

$$= \frac{12(3 + \sqrt{2})}{(3 - \sqrt{2})(3 + \sqrt{2})} = \frac{12(3 + \sqrt{2})}{9 - 2} = \frac{12(3 + \sqrt{2})}{7}$$

↑
notice difference of 2 squares or

split and repeat. $\& 3(3 + \sqrt{2}) - \sqrt{2}(3 + \sqrt{2})$
etc

Section 2.8 Algebraic surd equations

4. Show that $\frac{-1 + \sqrt{3}}{1 + \sqrt{3}} = 2 - \sqrt{3}$. easy way is to multiply by LCD

if its true then

$$\begin{aligned} -1 + \sqrt{3} &= (2 - \sqrt{3})(1 + \sqrt{3}) \\ &= 2 - 2\sqrt{3} - \sqrt{3} - 3 \\ &= -1 - \sqrt{3} \quad \checkmark \end{aligned}$$

Or.

multiply

$$\frac{(-1 + \sqrt{3})(1 - \sqrt{3})}{(1 + \sqrt{3})(1 - \sqrt{3})}$$

and your answer should be $2 - \sqrt{3}$