

Laws of surds

Can you find the
the mistake?
1 2 3 4 5 6 7 8 9

Simplify as far as possible or rationalise the denominator.

$$\sqrt{72}$$

Solution: $\sqrt{72} = \sqrt{4}\sqrt{18} = 2\sqrt{18}$

$$4\sqrt{11}(7\sqrt{11} + 5\sqrt{5})$$

Solution: $11\sqrt{121} + 9\sqrt{55} = 121 + 9\sqrt{55}$

$$\sqrt{180} + \sqrt{45}$$

Solution: $\sqrt{3}\sqrt{60} + \sqrt{3}\sqrt{15} = \sqrt{3}\sqrt{75}$

$$\sqrt{\frac{9}{25}}$$

Solution: $\frac{3}{25}$

$$\frac{3}{\sqrt{7}}$$

Solution: $3\sqrt{7}$

$$\frac{1}{2 - \sqrt{3}}$$

Solution: $\frac{1}{2 - \sqrt{3}} \times \frac{2 + \sqrt{3}}{2 + \sqrt{3}} = \frac{2 + \sqrt{3}}{4 - 3} = \frac{2 + \sqrt{3}}{1}$

$$(3\sqrt{5} - \sqrt{2})(\sqrt{5} - 2\sqrt{2})$$

Solution: $3\sqrt{5} - 6\sqrt{10} - \sqrt{10} - 2\sqrt{2}$
 $= 3\sqrt{5} - 7\sqrt{10} - 2\sqrt{2}$

$$\frac{1 + 2\sqrt{2}}{\sqrt{2} + 5}$$

Solution: $\frac{1 + 2\sqrt{2}}{\sqrt{2} + 5} \times \frac{\sqrt{2} - 5}{\sqrt{2} - 5} = \frac{\sqrt{2} - 5 + 4 - 10\sqrt{2}}{4 - 5} = \frac{-1 - 9\sqrt{2}}{-1} = 1 + 9\sqrt{2}$

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Simplify as far as possible or rationalise the denominator.

$\sqrt{56}$	$(5 + \sqrt{3})(6 + \sqrt{3})$	$\frac{10}{\sqrt{20}}$	$\frac{3\sqrt{4}}{2\sqrt{5}}$
$\sqrt{96}$	$(7 + \sqrt{5})(7 - \sqrt{5})$	$\frac{\sqrt{2}}{\sqrt{8}}$	$\frac{3 + \sqrt{3}}{4 - \sqrt{3}}$
$\sqrt{320} + \sqrt{45}$	$(7 - \sqrt{2})(4 - 3\sqrt{2})$	$\frac{5\sqrt{2}}{\sqrt{5}}$	$\frac{4 - \sqrt{2}}{5 + \sqrt{2}}$
$\frac{\sqrt{30} \times \sqrt{12}}{\sqrt{2} \times \sqrt{5}}$	$(6 + 3\sqrt{3})(6 - 3\sqrt{3})$	$\frac{5}{3\sqrt{7}}$	$\frac{\sqrt{5} - \sqrt{3}}{\sqrt{5} + \sqrt{3}}$

