## surds

| | |
|---|---|
| $\sqrt[n]{x} = y$ | $\sqrt[5]{32} = 2$ |
| $y^n = x$ | $2^5 = 32$ |
| $(\sqrt{x})^2 = x$ | |
| $\sqrt{x^2} = x$ | |
| $\sqrt{xy} = \sqrt{x} \times \sqrt{y}$ | |

## surds (adding and subtracting surds)

Q) Simplify the following

$a) \sqrt{8} + \sqrt{2}$
$= \sqrt{4 \times 2} + \sqrt{2}$
$= 2\sqrt{2} + \sqrt{2}$
$= 3\sqrt{2}$

$b) \sqrt{27} + \sqrt{3}$
$= \sqrt{9 \times 3} + \sqrt{3}$
$= 3\sqrt{3} + \sqrt{3}$
$= 4\sqrt{3}$

## multiplying surds

$a) \sqrt{5} \times \sqrt{17}$
$= \sqrt{85}$

$b) 3\sqrt{7} \times 2\sqrt{5}$
$= 3 \times 2\sqrt{7 \times 5}$
$= 6\sqrt{35}$

$c) -\sqrt{6} \times -\sqrt{11}$
$= -1 \times -1 \times \sqrt{6 \times 11}$
$= +1\sqrt{66}$

## dividing surds

$a)\ \sqrt{33} \div \sqrt{11}$

$= \sqrt{\frac{33}{11}}$

$= \sqrt{3}$

$b)\ -\sqrt{20} \div \sqrt{2}$

$= -\sqrt{\frac{20}{2}}$

$= -\sqrt{10}$

$c)\ -\frac{\sqrt{50}}{\sqrt{10}}$

$= -\sqrt{\frac{50}{10}}$

$= -\sqrt{5}$

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