

Surds and Indices

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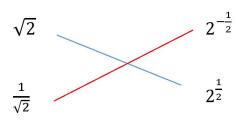
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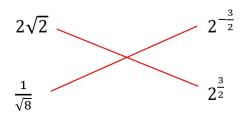


1) Surds and Indices: Easier

1) Match each surd to it's index form equivalent. One has been done for you.



$$2^2\sqrt{2}$$
 - $2^{\frac{5}{2}}$



(4 marks)

2) Write $\sqrt{3}$ in the form 3^n

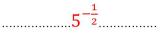
 $3^{\frac{1}{2}}$

3¹/₂.....

(1 marks)

3) Write $\frac{1}{\sqrt{5}}$ in the form 5^n

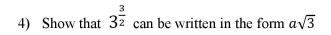
$$5^{-\frac{1}{2}}$$



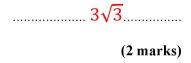
(1 marks)



1) Surds and Indices: Medium



$$3^{\frac{3}{2}} = \left(\sqrt{3}\right)^3 = \sqrt{3} \times \sqrt{3} \times \sqrt{3} = 3\sqrt{3}$$



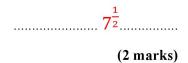
5) Show that $8^{\frac{1}{2}}$ can be written in the form $a\sqrt{2}$

$$8^{\frac{1}{2}} = \sqrt{8} = 2\sqrt{2}$$

$$2\sqrt{2}$$
 (2 marks)

6) Write $\frac{7}{\sqrt{7}}$ in the form 7^n

$$\frac{7}{\sqrt{7}} = \frac{7\sqrt{7}}{7} = \sqrt{7} = 7^{\frac{1}{2}}$$





1) Surds and Indices: Harder

7) Show that $27^{-\frac{1}{2}}$ can be written in the form $\frac{\sqrt{3}}{a}$

$$27^{-\frac{1}{2}} = \frac{1}{\sqrt{27}} = \frac{1}{3\sqrt{3}} = \frac{\sqrt{3}}{3\times3} = \frac{\sqrt{3}}{9}$$



(3 marks)

8) Show that $20^{-\frac{3}{2}}$ can be written in the form $\frac{\sqrt{5}}{a}$

$$20^{-\frac{3}{2}} = \frac{1}{\left(\sqrt{20}\right)^3} = \frac{1}{20\sqrt{20}} = \frac{1}{20 \times 2 \times \sqrt{5}} = \frac{\sqrt{5}}{40 \times 5} = \frac{\sqrt{5}}{200}$$

$$\frac{\sqrt{5}}{200}$$

(4 marks)

9) Write $24\sqrt{3}$ in the form 12^n

$$24\sqrt{3} = 12 \times 2 \times \sqrt{3} = 12 \times \sqrt{4} \times \sqrt{3} = 12\sqrt{12} = 12^{1} \times 12^{\frac{1}{2}} = 12^{\frac{3}{2}}$$