REVIEW

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POWERS AND ROOTS

FRACTIONAL & NEGATIVE INDICES

NO CALCULATOR

Ref: G133.2R1

A1 State the value of 5^0	**A2** State the value of 7^1	**A3** Evaluate 4^{-3} Give your answer as a fraction in its simplest terms.	**A4** Evaluate $\sqrt[3]{125}$
B1 Evaluate $49^{\frac{1}{2}}$	**B2** Evaluate $27^{\frac{1}{3}}$	**B3** Evaluate $64^{\frac{2}{3}}$	**B4** Evaluate $16^{\frac{3}{4}}$
C1 Evaluate $8^{-\frac{1}{3}}$ Give your answer as a fraction in its simplest terms.	**C2** Evaluate $36^{-\frac{1}{2}}$ Give your answer as a fraction in its simplest terms.	**C3** Evaluate $81^{-\frac{3}{4}}$ Give your answer as a fraction in its simplest terms.	**C4** Evaluate $216^{-\frac{2}{3}}$ Give your answer as a fraction in its simplest terms.
D1 Evaluate $\left(\frac{9}{16}\right)^{\frac{1}{2}}$ Give your answer as a fraction in its simplest terms.	**D2** Evaluate $\left(\frac{27}{343}\right)^{\frac{2}{3}}$ Give your answer as a fraction in its simplest terms.	**D3** Evaluate $\left(\frac{125}{8}\right)^{-\frac{1}{3}}$ Give your answer as a fraction in its simplest terms.	**D4** Evaluate $\left(\frac{49}{36}\right)^{-\frac{3}{2}}$ Give your answer as a fraction in its simplest terms.

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Ref: G133.2R1

A1

State the value of 5^0

1

A2

State the value of 7^1

7

A3

$4^{-3} = \frac{1}{4^3}$

$= \frac{1}{64}$

A4

Evaluate $\sqrt[3]{125}$

5

B1

$49^{\frac{1}{2}} = \sqrt{49}$

$= 7$

B2

$27^{\frac{1}{3}} = \sqrt[3]{27}$

$= 3$

B3

$64^{\frac{2}{3}} = \left(\sqrt[3]{64}\right)^2$

$= 4^2$

$= 16$

B4

$16^{\frac{3}{4}} = \left(\sqrt[4]{16}\right)^3$

$= 2^3$

$= 8$

C1

$8^{-\frac{1}{3}} = \frac{1}{8^{\frac{1}{3}}}$

$= \frac{1}{\sqrt[3]{8}} \quad = \frac{1}{2}$

C2

$36^{-\frac{1}{2}} = \frac{1}{36^{\frac{1}{2}}}$

$= \frac{1}{\sqrt{36}} \quad = \frac{1}{6}$

C3

$81^{-\frac{3}{4}} = \frac{1}{81^{\frac{3}{4}}}$

$= \frac{1}{\left(\sqrt[4]{81}\right)^3} \quad = \frac{1}{3^3} \quad = \frac{1}{27}$

C4

$216^{-\frac{2}{3}} = \frac{1}{216^{\frac{2}{3}}}$

$= \frac{1}{\left(\sqrt[3]{216}\right)^2} \quad = \frac{1}{6^2} \quad = \frac{1}{36}$

D1

$\left(\frac{9}{16}\right)^{\frac{1}{2}} = \sqrt{\frac{9}{16}}$

$= \frac{\sqrt{9}}{\sqrt{16}} \quad = \frac{3}{4}$

D2

$\left(\frac{27}{343}\right)^{\frac{2}{3}} = \left(\sqrt[3]{\frac{27}{343}}\right)^2$

$= \left(\frac{3}{7}\right)^2 \quad = \frac{9}{49}$

D3

$\left(\frac{125}{8}\right)^{-\frac{1}{3}} = \left(\frac{8}{125}\right)^{\frac{1}{3}}$

$= \sqrt[3]{\frac{8}{125}} \quad = \frac{2}{5}$

D4

$\left(\frac{49}{36}\right)^{-\frac{3}{2}} = \left(\frac{36}{49}\right)^{\frac{3}{2}}$

$= \left(\sqrt{\frac{36}{49}}\right)^3 = \left(\frac{6}{7}\right)^3 = \frac{216}{343}$