

Indices (and surds) Revision

A Simplify fully and leave in index form

1) $(4x^2y^3)^3$ 2) $(\sqrt{x} \times \sqrt[3]{x})^2$ 3) $\frac{x^2 \times \sqrt{x}}{(\sqrt[3]{x})^5}$

B Evaluate

1) 2^{-3} 2) $16^{\frac{3}{4}}$ 3) $5^{-\frac{1}{2}}$ 4) $(0.36)^{-\frac{1}{2}}$

C Write as a power of 4

1) 64 2) 2 3) 8 4) $\frac{1}{16}$

D Solve to find x

1) $25^x = 5$ 2) $\left(\frac{2}{3}\right)^x = \frac{9}{4}$ 3) $64^x = \frac{1}{16}$

E Solve for x

1) $5^{x+1} = 25^{x-2}$ 2) $4^x = 8^{5-2x}$ 3) $5^{2x-1} = \frac{1}{25}$

F Rationalise the denominator and simplify

1) $\frac{2}{3-\sqrt{2}}$ 2) $\frac{8}{\sqrt{5}+\sqrt{3}}$ 3) $\frac{1-\sqrt{3}}{2-\sqrt{3}}$

Answers

A1) $64x^6y^9$ 2) $x^{\frac{5}{3}}$ 3) $x^{\frac{5}{6}}$ B1) $1/8$ 2) 8 3) $1/25$ 4) $5/3$

C1) 4^3 2) $4^{\frac{1}{2}}$ 3) $4^{\frac{3}{2}}$ 4) 4^{-2} D1) $\frac{1}{2}$ 2) -2 3) $-2/3$

E1) 5 2) $15/8$ 3) $-1/2$ F1) $\frac{6+2\sqrt{2}}{7}$ 2) $4\sqrt{5} - 4\sqrt{3}$ 3) $5 - 3\sqrt{3}$