

Solutions to Past Paper Questions – Negative and Fractional Indices

6) (d) (i) $\frac{1}{100}$ (ii) 1 (iii) $27^{\frac{2}{3}} = (\sqrt[3]{27})^2 = 3^2 = 9$

13) (a) $\left(\frac{27}{125}\right)^{-\frac{1}{3}} = \sqrt[3]{\frac{125}{27}} = \frac{5}{3}$

17) (a) (i) $\frac{1}{3^2} = \frac{1}{9}$

(ii) $\sqrt{36} = 6$

(iii) $(\sqrt[3]{27})^2 = 3^2 = 9$

(iv) $\left(\frac{16}{81}\right)^{-\frac{3}{4}} = \left(\frac{81}{16}\right)^{\frac{3}{4}} = \left(\sqrt[4]{\frac{81}{16}}\right)^3 = \left(\frac{3}{2}\right)^3 = \frac{27}{8}$

14) (a) (i) $8^0 = 1$ (ii) $5^{-2} = \frac{1}{25}$ (iii) $27^{-\frac{1}{3}} = \frac{1}{3}$ (iv) $25^{\frac{1}{2}} = 5$

(b) $\sqrt{\frac{4}{2^k}} = \left(\frac{2^2}{2^k}\right)^{\frac{1}{2}} = (2^{2-k})^{\frac{1}{2}} = 2^{1-\frac{1}{2}k}$

So $c = 1 - \frac{1}{2}k$