

(viii) We have to prove that
$$\frac{3^{-3} \times 6^2 \times \sqrt{98}}{5^2 \times \sqrt[3]{\frac{1}{25}} \times (15)^{\frac{-4}{3}} \times 3^{\frac{1}{3}}} = 28\sqrt{2}$$
. So,

Let
$$x = \frac{3^{-3} \times 6^{2} \times \sqrt{98}}{5^{2} \times \sqrt[3]{\frac{1}{25}} \times (15)^{\frac{-4}{3}} \times 3^{\frac{1}{3}}}$$

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$$= \frac{3^{-3} \times 3^{2} \times 2^{2} \times \sqrt{7 \times 7 \times 2}}{5^{2} \times \sqrt[3]{\frac{1}{25}} \times (15)^{\frac{-4}{3}} \times 3^{\frac{1}{3}}}$$

$$= \frac{3^{-3+2} \times 2^{2} \times 7\sqrt{2}}{5^{2} \times \frac{1}{5^{2} \times \frac{1}{3}} \times 5^{\frac{-4}{3}} \times 3^{\frac{1}{3}}}$$

$$x = \frac{3^{-1} \times 2^{2} \times 7\sqrt{2}}{\frac{5^{2}}{1} \times \frac{1}{5^{3}} \times \frac{1}{5^{3}} \times \frac{1}{3^{3}} \times \frac{1}{1}}$$

$$= 3^{-1} \times 2^{2} \times 7\sqrt{2} \times \frac{1}{5^{2}} \times 5^{\frac{2}{3}} \times 5^{\frac{4}{3}} \times 3^{\frac{4}{3}} \times \frac{1}{3^{\frac{1}{3}}}$$

$$= 3^{-1 + \frac{4}{3} - \frac{1}{3}} \times 4 \times 7\sqrt{2} \times 5^{-2 + \frac{2}{3} + \frac{4}{3}}$$

$$= 3^{-1 + \frac{4}{3} - \frac{1}{3}} \times 28\sqrt{2} \times 5^{-2 + \frac{2}{3} + \frac{4}{3}}$$

$$= 3^{-1 + \frac{4}{3} - \frac{1}{3}} \times 28\sqrt{2} \times 5^{-2 + \frac{2}{3} + \frac{4}{3}}$$

$$= 3^{-1 + \frac{4}{3} - \frac{1}{3}} \times 28\sqrt{2} \times 5^{-2 + \frac{2}{3} + \frac{4}{3}}$$

$$= 3^{-1 + \frac{4}{3} - \frac{1}{3}} \times 28\sqrt{2} \times 5^{-\frac{2 + 3}{3} + \frac{2}{3} + \frac{4}{3}}$$

$$= 3^{0} \times 28\sqrt{2} \times 5^{0}$$

$$= 1 \times 28\sqrt{2} \times 1$$

$$= 28\sqrt{2}$$
Hence,
$$\frac{3^{-3} \times 6^{2} \times \sqrt{98}}{5^{2} \times 3\sqrt{\frac{1}{25}} \times (15)^{\frac{-4}{3}} \times 3^{\frac{1}{3}}} = 28\sqrt{2}$$

(ix) We have to prove that
$$\frac{(0.6)0 - (0.1)^{-1}}{\left(\frac{3}{8}\right)^{-1} \left(\frac{3}{2}\right)^{3} + \left(\frac{-1}{3}\right)^{-1}} = \frac{-3}{2}$$
. So,

Let
$$x = \frac{(0.6)0 - (0.1)^{-1}}{\left(\frac{3}{8}\right)^{-1} \left(\frac{3}{2}\right)^{3} + \left(\frac{-1}{3}\right)^{-1}}$$
$$x = \frac{1 - \left(\frac{0.1 \times 10}{1 \times 10}\right)^{-1}}{\left(\frac{3^{-1}}{2^{3 \times -1}}\right) \left(\frac{3^{3}}{2^{3}}\right) + \left(\frac{-1^{-1}}{3^{-1}}\right)}$$
$$= \frac{1 - \frac{1}{10^{-1}}}{\left(\frac{3^{-1}}{2^{-3}}\right) \left(\frac{3^{3}}{2^{3}}\right) + \left(\frac{-1}{\frac{1}{3^{1}}}\right)}$$

$$= \frac{1 - \frac{1}{\frac{1}{10}}}{\frac{3^{-1+3}}{2^{-3+3}} + \left(-1 \times \frac{3}{1}\right)}$$

$$= \frac{1 - 1 \times 10}{\frac{3^{2}}{2^{0}} + \left(-3\right)}$$

$$\Rightarrow x = \frac{1 - 10}{\frac{3^{2}}{1} - 3} = \frac{-9}{9 - 3} = -\frac{3}{2}$$
Hence,
$$\frac{\left(0.6\right)0 - \left(0.1\right)^{-1}}{\left(\frac{3}{8}\right)^{-1} \left(\frac{3}{2}\right)^{3} + \left(\frac{-1}{3}\right)^{-1}} = -\frac{3}{2}$$

****** END ******