Cubes and Cubes Roots Ex 4.4 Q6

Answer :

(i)

We have:

$$0.001728 = \frac{1728}{1000000}$$

$$\therefore \sqrt[3]{0.001728} = \sqrt[3]{\frac{1728}{1000000}} = \frac{\sqrt[3]{1728}}{\sqrt[3]{1000000}}$$

Now

On factorising 1728 into prime factors, we get:

$$1728 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$$

On grouping the factors in triples of equal factors, we get:

$$1728 = \{2 \times 2 \times 2\} \times \{2 \times 2 \times 2\} \times \{3 \times 3 \times 3\}$$

Now, taking one factor from each triple, we get:

$$\sqrt[3]{1728} = 2 \times 2 \times 3 = 12$$

Also

$$\sqrt[3]{1000000} = \sqrt[3]{100 \times 100 \times 100} = 100$$

$$\therefore \sqrt[3]{0.001728} = \frac{\sqrt[3]{1728}}{\sqrt[3]{1000000}} = \frac{12}{100} = 0.12$$

(ii)
We have:

$$0.003375 = \frac{3375}{1000000}$$

$$\therefore \sqrt[3]{0.003375} = \sqrt[3]{\frac{3375}{1000000}} = \frac{\sqrt[3]{3375}}{\sqrt[3]{1000000}}$$

Now

On factorising 3375 into prime factors, we get:
$3375 = 3 \times 3 \times 3 \times 5 \times 5 \times 5$

On grouping the factors in triples of equal factors, we get:
$3375 = \{3 \times 3 \times 3\} \times \{5 \times 5 \times 5\}$

Now, taking one factor from each triple, we get:
$\sqrt[3]{3375} = 3 \times 5 = 15$

Also
$\sqrt[3]{1000000} = \sqrt[3]{100 \times 100 \times 100} = 100$

$$\therefore \sqrt[3]{0.003375} = \frac{\sqrt[3]{3375}}{\sqrt[3]{1000000}} = \frac{15}{100} = 0.15$$

(iii)
We have:

$$0.001 = \frac{1}{1000}$$

$$\therefore \sqrt[3]{0.001} = \sqrt[3]{\frac{1}{1000}} = \frac{\sqrt[3]{1}}{\sqrt[3]{1000}} = \frac{1}{10} = 0.1$$

(iv)
We have:

$$1.331 = \frac{1331}{1000}$$

$$\therefore \sqrt[3]{1.331} = \sqrt[3]{\frac{1331}{1000}} = \frac{\sqrt[3]{1331}}{\sqrt[3]{1000}} = \frac{\sqrt[3]{11 \times 11 \times 11}}{\sqrt[3]{1000}} = \frac{11}{10} = 1.1$$

Cubes and Cubes Roots Ex 4.4 Q7

Answer :

(i)

To evaluate the value of the given expression, we need to proceed as follows:

$$\sqrt[3]{27}+\sqrt[3]{0.008}+\sqrt[3]{0.064}=\sqrt[3]{3\times 3\times 3}+\sqrt[3]{\frac{8}{1000}}+\sqrt[3]{\frac{64}{1000}}$$
$$=\sqrt[3]{3\times 3\times 3}+\frac{\sqrt[3]{8}}{\sqrt[3]{1000}}+\frac{\sqrt[3]{64}}{\sqrt[3]{1000}}$$
$$=\sqrt[3]{3\times 3\times 3}+\frac{\sqrt[3]{2\times 2\times 2}}{\sqrt[3]{1000}}+\frac{\sqrt[3]{4\times 4\times 4}}{\sqrt[3]{1000}}$$
$$=3+\frac{2}{10}+\frac{4}{10}$$
$$=3+0.2+0.4$$
$$=3.6$$

Thus, the answer is 3.6.

(ii)

To evaluate the value of the given expression, we need to proceed as follows:

$$\sqrt[3]{1000}+\sqrt[3]{0.008}-\sqrt[3]{0.125}=\sqrt[3]{10\times 10\times 10}+\sqrt[3]{\frac{8}{1000}}-\sqrt[3]{\frac{125}{1000}}$$
$$=\sqrt[3]{10\times 10\times 10}+\frac{\sqrt[3]{8}}{\sqrt[3]{1000}}-\frac{\sqrt[3]{125}}{\sqrt[3]{1000}}$$
$$=\sqrt[3]{10\times 10\times 10}+\frac{\sqrt[3]{2^3}}{\sqrt[3]{1000}}-\frac{\sqrt[3]{5^3}}{\sqrt[3]{1000}}$$
$$=10+\frac{2}{10}-\frac{5}{10}$$
$$=10+0.2-0.5$$
$$=9.7$$

Thus, the answer is 9.7.

(iii)

To evaluate the value of the given expression, we need to proceed as follows:

$$\sqrt[3]{\frac{729}{216}}\times\frac{6}{9}=\sqrt[3]{\frac{729}{216}}\times\frac{6}{9}=\frac{\sqrt[3]{729}}{\sqrt[3]{216}}\times\frac{6}{9}=\frac{\sqrt[3]{9\times 9\times 9}}{\sqrt[3]{2\times 2\times 2\times 3\times 3\times 3}}\times\frac{6}{9}=\frac{9}{2\times 3}\times\frac{6}{9}=\frac{\cancel{9}^{1}}{\cancel{6}}\times\frac{\cancel{6}^{1}}{\cancel{9}}=1$$

Thus, the answer is 1.

(iv)

To evaluate the value of the expression, we need to proceed as follows:

$$\sqrt[3]{\frac{0.027}{0.008}}\div\sqrt{\frac{0.09}{0.04}}-1=\sqrt[3]{\frac{\frac{27}{1000}}{\frac{8}{1000}}}\div\sqrt{\frac{\frac{9}{100}}{\frac{4}{100}}}-1=\sqrt[3]{\frac{27}{8}}\div\sqrt{\frac{9}{4}}-1=\frac{\sqrt[3]{27}}{\sqrt[3]{8}}\div\frac{\sqrt{9}}{\sqrt{4}}-1=\frac{3}{2}\div\frac{3}{2}$$
$$-1=\frac{\cancel{2}^{1}}{\cancel{3}}\times\frac{\cancel{3}^{1}}{\cancel{2}}-1=1-1=0$$

Thus, the answer is 0.

(v)

To evaluate the value of the expression, we need to proceed as follows:

$$\sqrt[3]{0.1\times 0.1\times 0.1\times 13\times 13\times 13}=\sqrt[3]{\frac{1}{10}\times\frac{1}{10}\times\frac{1}{10}\times 13\times 13\times 13}=\sqrt[3]{\frac{13\times 13\times 13}{10\times 10\times 10}}$$
$$=\frac{\sqrt[3]{13\times 13\times 13}}{\sqrt[3]{10\times 10\times 10}}=\frac{13}{10}=1.3$$

Thus, the answer is 1.3.

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