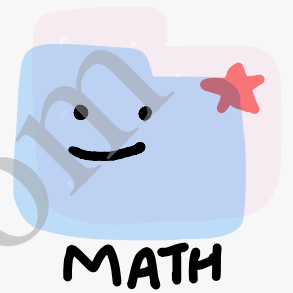


Cubes And Cube Roots

Ex. 6.3



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Ex. 6.3

1. $\sqrt[3]{\frac{-125}{729}} = -\frac{\sqrt[3]{125}}{\sqrt[3]{729}}$

$$= \frac{-\sqrt[3]{5 \times 5 \times 5}}{\sqrt[3]{3 \times 3 \times 3 \times 3 \times 3 \times 3}}$$

$$= \frac{-5}{3 \times 3}$$

$$= -\frac{5}{9} \quad (C)$$

$$\begin{array}{r} 5 \overline{)125} \\ \underline{5 } \\ 25 \\ \underline{25} \\ 0 \end{array}$$

$$\begin{array}{r} 3 \overline{)729} \\ \underline{3 } \\ 243 \\ \underline{3 } \\ 81 \\ \underline{3 } \\ 27 \\ \underline{3 } \\ 9 \\ \underline{3 } \\ 0 \end{array}$$

2. $\sqrt[3]{1.331} = \frac{\sqrt[3]{1331}}{\sqrt[3]{1000}}$

$$= \frac{\sqrt[3]{11 \times 11 \times 11}}{\sqrt[3]{2 \times 2 \times 2 \times 5 \times 5 \times 5}}$$

$$= \frac{11}{2 \times 5}$$

$$= \frac{11}{10}$$

$$= 1.1 \quad (A)$$

$$\begin{array}{r} 11 \overline{)1331} \\ \underline{11 } \\ 221 \\ \underline{221} \\ 0 \end{array}$$

$$\begin{array}{r} 2 \overline{)1000} \\ \underline{2 } \\ 500 \\ \underline{2 } \\ 250 \\ \underline{5 } \\ 125 \\ \underline{5 } \\ 25 \\ \underline{5 } \\ 0 \end{array}$$

3. $\sqrt[3]{-125} = -\sqrt[3]{125}$

$$= -\sqrt[3]{5 \times 5 \times 5}$$

$$= -5 \quad (D)$$

$$\begin{array}{r} 5 \overline{)125} \\ \underline{5 } \\ 25 \\ \underline{25} \\ 0 \end{array}$$

4. $\sqrt[3]{-0.000001} = -\sqrt[3]{0.000001}$

$$= -\frac{\sqrt[3]{1}}{\sqrt[3]{1000000}}$$

$$= \frac{-1}{100} = -0.01 \quad (B)$$

$$\begin{aligned}
 5. \quad \sqrt[3]{-3\frac{3}{8}} &= \sqrt[3]{-\frac{27}{8}} \\
 &= -\frac{\sqrt[3]{27}}{\sqrt[3]{8}} \\
 &= -\frac{\sqrt[3]{3 \times 3 \times 3}}{\sqrt[3]{2 \times 2 \times 2}} \\
 &= -\frac{3}{2} \quad (C)
 \end{aligned}$$

$$\begin{aligned}
 6. \quad &\sqrt[3]{216 \times 125000} \\
 = &\sqrt[3]{216} \times \sqrt[3]{125000} \\
 = &\sqrt[3]{2 \times 2 \times 2 \times 3 \times 3 \times 3} \times \sqrt[3]{2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5} \\
 = &2 \times 3 \times 2 \times 5 \times 5 \\
 = &300
 \end{aligned}$$

2	216	2	125000
2	108	2	62500
2	54	2	31250
3	27	5	15625
3	9	5	3125
	3	5	625
		5	125
		5	25
			5

$$\begin{aligned}
 7. \quad &\sqrt[3]{-343 \times 64} \\
 = &-\sqrt[3]{343} \times \sqrt[3]{64} \\
 = &-\sqrt[3]{7 \times 7 \times 7} \times \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2} \\
 = &-7 \times 2 \times 2 \\
 = &-28
 \end{aligned}$$

7	343	2	64
7	49	2	32
	7	2	16
		2	8
		2	4
			2

$$\begin{array}{r}
 8. \quad \sqrt[3]{\begin{array}{r} 512 \\ 1331 \end{array}} \\
 - \sqrt[3]{512} \\
 \hline
 \sqrt[3]{1331} \\
 - \sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2} \\
 \hline
 \sqrt[3]{11 \times 11 \times 11} \\
 - 2 \times 2 \times 2 \\
 \hline
 11 \\
 - 8 \\
 \hline
 11
 \end{array}$$

$$\begin{array}{r}
 2 \mid 512 \\
 2 \mid 256 \\
 2 \mid 128 \\
 2 \mid 64 \\
 2 \mid 32 \\
 2 \mid 16 \\
 2 \mid 8 \\
 2 \mid 4 \\
 2
 \end{array}
 \quad
 \begin{array}{r}
 11 \mid 1331 \\
 11 \mid 121 \\
 11
 \end{array}$$

$$\begin{array}{r}
 9. \quad \sqrt[3]{\begin{array}{r} 125 \\ 216 \end{array}} \\
 - \sqrt[3]{125} \\
 \hline
 \sqrt[3]{216} \\
 - \sqrt[3]{5 \times 5 \times 5} \\
 \hline
 \sqrt[3]{2 \times 2 \times 2 \times 3 \times 3 \times 3} \\
 - 5 \\
 \hline
 2 \times 3 \\
 - 5 \\
 \hline
 6
 \end{array}$$

$$\begin{array}{r}
 5 \mid 125 \\
 5 \mid 25 \\
 5
 \end{array}
 \quad
 \begin{array}{r}
 2 \mid 216 \\
 2 \mid 108 \\
 2 \mid 54 \\
 3 \mid 27 \\
 3 \mid 9 \\
 3
 \end{array}$$

$$\begin{array}{r}
 10. \quad \sqrt[3]{\begin{array}{r} 5 \ 104 \\ 125 \end{array}} \\
 \sqrt[3]{729} \\
 \sqrt[3]{125} \\
 \sqrt[3]{729} \\
 \sqrt[3]{125}
 \end{array}$$

$$\begin{array}{r}
 3 \mid 729 \\
 3 \mid 243 \\
 3 \mid 81 \\
 3 \mid 27 \\
 3 \mid 9 \\
 3
 \end{array}$$

$$\begin{array}{r}
 5 \mid 125 \\
 5 \mid 25 \\
 5
 \end{array}$$

$$= \frac{\sqrt[3]{3 \times 3 \times 3 \times 3 \times 3 \times 3}}{\sqrt[3]{5 \times 5 \times 5}}$$

$$= \frac{3 \times 3}{5}$$

$$= \frac{9}{5}$$

$$= 1 \frac{4}{5}$$

$$11. \sqrt[3]{-2 \frac{10}{27}}$$

$$= -\sqrt[3]{\frac{64}{27}}$$

$$= -\frac{\sqrt[3]{64}}{\sqrt[3]{27}}$$

$$= -\frac{\sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2}}{\sqrt[3]{3 \times 3 \times 3}}$$

$$= -\frac{2 \times 2}{3}$$

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

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

$$\begin{array}{r} 2 \overline{) 64} \\ \underline{2 \ 32} \\ 2 \ 16 \\ \underline{2 \ 8} \\ 2 \ 4 \\ \underline{2 \ 2} \end{array}$$

$$\begin{array}{r} 3 \overline{) 27} \\ \underline{3 \ 9} \\ 3 \end{array}$$

$$12. \sqrt[3]{0.064}$$

$$= \frac{\sqrt[3]{64}}{\sqrt[3]{1000}}$$

$$= \frac{\sqrt[3]{64}}{\sqrt[3]{1000}}$$

$$= \frac{\sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2}}{\sqrt[3]{2 \times 2 \times 2 \times 5 \times 5 \times 5}}$$

$$= \frac{2 \times 2}{2 \times 5}$$

$$= \frac{4}{10}$$

$$= 0.4$$

$$\begin{array}{r} 2 \overline{) 64} \\ 2 \overline{) 32} \\ 2 \overline{) 16} \\ 2 \overline{) 8} \\ 2 \overline{) 4} \\ 2 \end{array}$$

$$\begin{array}{r} 2 \overline{) 1000} \\ 2 \overline{) 500} \\ 2 \overline{) 250} \\ 5 \overline{) 125} \\ 5 \overline{) 25} \\ 5 \end{array}$$

$$13. \frac{\sqrt[3]{0.000125}}{\sqrt[3]{1000000}}$$

$$= \frac{\sqrt[3]{125}}{\sqrt[3]{5 \times 5 \times 5}}$$

$$= \frac{\sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5}}{5}$$

$$= \frac{2 \times 2 \times 5 \times 5}{100}$$

$$= 0.05$$

$$\begin{array}{r} 5 \overline{) 125} \\ 5 \overline{) 25} \\ 5 \end{array}$$

$$\begin{array}{r} 2 \overline{) 1000000} \\ 2 \overline{) 500000} \\ 2 \overline{) 250000} \\ 2 \overline{) 125000} \\ 2 \overline{) 62500} \\ 2 \overline{) 31250} \\ 5 \overline{) 15625} \\ 5 \overline{) 3125} \\ 5 \overline{) 625} \\ 5 \overline{) 125} \\ 5 \overline{) 25} \\ 5 \end{array}$$

$$14. \frac{\sqrt[3]{2.744}}{\sqrt[3]{1000}}$$

$$= \frac{\sqrt[3]{2744}}{\sqrt[3]{1000}}$$

$$= \frac{\sqrt[3]{2 \times 2 \times 2 \times 7 \times 7 \times 7}}{\sqrt[3]{2 \times 2 \times 2 \times 5 \times 5 \times 5}}$$

$$= \frac{2 \times 7}{2 \times 5} = \frac{14}{10} = 1.4$$

$$\begin{array}{r} 2 \overline{) 2744} \\ 2 \overline{) 1372} \\ 2 \overline{) 686} \\ 7 \overline{) 343} \\ 7 \overline{) 49} \\ 7 \end{array}$$

$$\begin{array}{r} 2 \overline{) 1000} \\ 2 \overline{) 500} \\ 2 \overline{) 250} \\ 5 \overline{) 125} \\ 5 \overline{) 25} \\ 5 \end{array}$$

$$\begin{aligned} 15. & \quad \sqrt[3]{-8000} \\ & = -\sqrt[3]{8000} \\ & = -\sqrt[3]{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5} \\ & = -2 \times 2 \times 5 \\ & = -20 \end{aligned}$$

$$\begin{array}{r} 2 \overline{) 8000} \\ \underline{4000} \\ 2000 \\ \underline{1000} \\ 1000 \\ \underline{500} \\ 500 \\ \underline{250} \\ 250 \\ \underline{125} \\ 125 \\ \underline{62} \\ 62 \\ \underline{31} \\ 31 \\ \underline{15} \\ 16 \end{array}$$

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