EduSahara™ Assignment

Name : Rationalising the Denominator

Chapter : Rational and Irrational Numbers

Grade : ICSE Grade IX

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1. $7\sqrt{4} \div 5\sqrt{6} =$

(i) $\frac{7}{15}\sqrt{6}$ (ii) $\frac{7}{15}\sqrt{8}$ (iii) $\frac{14}{5}$ (iv) $\frac{7}{15}\sqrt[4]{6}$ (v) $\frac{7}{15}\sqrt{3}$

2. $(8\sqrt{5}+8\sqrt{4}) \div (6\sqrt{9}+6\sqrt{8}) =$

(i) $(4\sqrt{3}+8-\frac{8}{3}\sqrt{10}-\frac{16}{3}\sqrt{2})$ (ii) $(4\sqrt{5}+9-\frac{8}{3}\sqrt{10}-\frac{16}{3}\sqrt{2})$ (iii) $(4\sqrt{5}+8-\frac{8}{3}\sqrt[4]{10}-\frac{16}{3}\sqrt{2})$

(iv) $(4\sqrt{5}+8-\frac{8}{3}\sqrt{10}-\frac{16}{3}\sqrt{5})$ (v) $(4\sqrt{5}+8-\frac{8}{3}\sqrt{10}-\frac{16}{3}\sqrt{2})$

3. The rationalising factor of $7\sqrt{88} =$

(i) $\sqrt{19}$ (ii) $\sqrt[4]{22}$ (iii) 22 (iv) $\sqrt{22}$ (v) $\sqrt{24}$

4. The rationalising factor of $(-2\sqrt{2}+7\sqrt{7}) =$

(i) $(-2\sqrt{\frac{1}{2}}-7\sqrt{7})$ (ii) $(-2\sqrt{2}-7\sqrt[4]{7})$ (iii) $(-2\sqrt{2}-49)$ (iv) $(-2\sqrt{2}-7\sqrt{7})$ (v) $(-2\sqrt{4}-7\sqrt{7})$

5. Rationalise the denominator of $\frac{1}{6\sqrt{5}}$

(i) $\frac{1}{6}$ (ii) $\frac{1}{30}\sqrt{7}$ (iii) $\frac{1}{30}\sqrt{3}$ (iv) $\frac{1}{30}\sqrt{5}$ (v) $\frac{1}{30}\sqrt[4]{5}$

6. Rationalise the denominator of $\frac{1}{(\sqrt{5}+\sqrt{2})}$

(i) $(\frac{1}{3}\sqrt{5}-\frac{1}{3}\sqrt{2})$ (ii) $(\frac{1}{3}\sqrt{5}-\frac{1}{3}\sqrt[4]{2})$ (iii) $(\frac{1}{3}\sqrt{8}-\frac{1}{3}\sqrt{2})$ (iv) $(\frac{1}{3}\sqrt{5}-\frac{2}{3})$ (v) $(\frac{1}{3}\sqrt{3}-\frac{1}{3}\sqrt{2})$

7. Rationalise the denominator of $\frac{1}{(-3\sqrt{8}-2\sqrt{9})}$

(i) $(-\frac{1}{6}\sqrt{4}+\frac{1}{6})$ (ii) $(-\frac{1}{6}\sqrt{2}+\frac{1}{6})$ (iii) $(-\frac{1}{6}\sqrt{2}+\frac{1}{4})$ (iv) $(-\frac{1}{6}\sqrt{\frac{1}{2}}+\frac{1}{6})$ (v) $(-\frac{1}{6}\sqrt{2}+\frac{1}{8})$

8. Rationalise the denominator of $\frac{1}{(-\sqrt{5}+\sqrt{2}+\sqrt{3})}$

(i) $(\frac{1}{4}\sqrt{2}+\frac{1}{6}+\frac{1}{12}\sqrt{30})$ (ii) $(\frac{1}{4}\sqrt{2}+\frac{1}{6}\sqrt{5}+\frac{1}{12}\sqrt{30})$ (iii) $(\frac{1}{4}\sqrt{2}+\frac{1}{6}\sqrt{3}+\frac{1}{12}\sqrt[4]{30})$ (iv) $(\frac{1}{4}\sqrt{2}+\frac{1}{6}\sqrt{3}+\frac{1}{12}\sqrt{30})$

(v) $(\frac{1}{4}\sqrt{2}+\frac{1}{6}\sqrt{3}+\frac{5}{2})$

9. Rationalise the denominator of $\frac{1}{(2\sqrt{4}-5\sqrt{3}+\sqrt{2})}$

(i) $(-\frac{244}{3121}-\frac{285}{3121}\sqrt{3}-\frac{89}{3121}\sqrt{2}-\frac{40}{3121}\sqrt{6})$ (ii) $(-\frac{244}{3121}-\frac{285}{3121}\sqrt{3}-\frac{89}{3121}\sqrt{2}-\frac{40}{3121}\sqrt{9})$

(iii) $(-\frac{246}{3121}-\frac{285}{3121}\sqrt{3}-\frac{89}{3121}\sqrt{2}-\frac{40}{3121}\sqrt{6})$ (iv) $(-\frac{244}{3121}-\frac{285}{3121}\sqrt[4]{3}-\frac{89}{3121}\sqrt{2}-\frac{40}{3121}\sqrt{6})$

(v) $(-\frac{244}{3121}-\frac{285}{3121}\sqrt{3}-\frac{89}{3121}\sqrt[4]{2}-\frac{40}{3121}\sqrt{6})$

10. Rationalise the denominator of $\frac{(\sqrt{4}-\sqrt{8})}{(\sqrt{5}+\sqrt{9})}$ =

(i) $(-\frac{1}{2}\sqrt{5}+\frac{1}{2}\sqrt{10}+\frac{3}{2}-\frac{3}{2}\sqrt{2})$ (ii) $(-\frac{1}{2}\sqrt{5}+\frac{1}{2}\sqrt{10}+\frac{3}{2}-\frac{3}{2}\sqrt{4})$ (iii) $(-\frac{1}{2}\sqrt{5}+\frac{1}{2}\sqrt{10}+\frac{5}{4}-\frac{3}{2}\sqrt{2})$

(iv) $(-\frac{1}{2}\sqrt{2}+\frac{1}{2}\sqrt{10}+\frac{3}{2}-\frac{3}{2}\sqrt{2})$ (v) $(-\frac{1}{2}\sqrt{5}+\frac{1}{2}\sqrt[4]{10}+\frac{3}{2}-\frac{3}{2}\sqrt{2})$

11. Rationalise the denominator of $\frac{(-5\sqrt{9}-4\sqrt{3})}{(\sqrt{3}+\sqrt{2})}$ =

(i) $(-15\sqrt{3}-12+15\sqrt{2}+4\sqrt{6})$ (ii) $(-15\sqrt{3}-11+15\sqrt{2}+4\sqrt{6})$ (iii) $(-15\sqrt{3}-12+15\sqrt[4]{2}+4\sqrt{6})$

(iv) $(-15\sqrt{3}-12+15\sqrt{2}+4\sqrt{9})$ (v) $(-15\sqrt{\frac{1}{3}}-12+15\sqrt{2}+4\sqrt{6})$

12. Simplify $\frac{(-\sqrt{4})}{(\sqrt{3}+\sqrt{5})}+\frac{\sqrt{3}}{(-\sqrt{4}+\sqrt{2})}-\frac{\sqrt{5}}{(\sqrt{2}-\sqrt{3})}$

(i) $(-\sqrt{5}-\frac{1}{2}\sqrt{6}+\sqrt[4]{10}+\sqrt{15})$ (ii) $(-\sqrt{2}-\frac{1}{2}\sqrt{6}+\sqrt{10}+\sqrt{15})$ (iii) $(-\sqrt{5}-\frac{1}{2}\sqrt[4]{6}+\sqrt{10}+\sqrt{15})$

(iv) $(-\sqrt{5}-\frac{1}{2}\sqrt{6}+\sqrt{10}+\sqrt{15})$ (v) $(-\sqrt{5}-\frac{1}{2}\sqrt{6}+\sqrt{10}+\sqrt{18})$

13. Simplify $\frac{(-\sqrt{7})}{(\sqrt{8}+\sqrt{6})} + \frac{(-\sqrt{8})}{(-\sqrt{2}+\sqrt{7})} - \frac{\sqrt{7}}{(-\sqrt{9}+\sqrt{8})}$

(i) $(\frac{3}{5}\sqrt{14}+\frac{1}{2}\sqrt{42}-\frac{4}{5}+3\sqrt{7})$ (ii) $(\frac{3}{5}\sqrt{11}+\frac{1}{2}\sqrt{42}-\frac{4}{5}+3\sqrt{7})$ (iii) $(\frac{3}{5}\sqrt{14}+\frac{1}{2}\sqrt{42}-\frac{4}{5}+3\sqrt{9})$

(iv) $(\frac{3}{5}\sqrt{14}+\frac{1}{2}\sqrt{42}-\frac{4}{7}+3\sqrt{7})$ (v) $(\frac{3}{5}\sqrt{14}+\frac{1}{2}\sqrt{42}-\frac{4}{5}+3\sqrt{7})$

14. Simplify $\frac{(-\sqrt{5})}{(\sqrt{4}-\sqrt{2})} + \frac{\sqrt{5}}{(\sqrt{5}+\sqrt{4})} - \frac{\sqrt{3}}{(\sqrt{4}+\sqrt{5})}$

(i) $(-3\sqrt{5}-\frac{1}{2}\sqrt{10}+5+2\sqrt{5}-\sqrt{15})$ (ii) $(-3\sqrt{5}-\frac{1}{2}\sqrt{10}+5+2\sqrt{3}-\sqrt{15})$ (iii) $(-3\sqrt{5}-\frac{1}{2}\sqrt{10}+6+2\sqrt{3}-\sqrt{15})$

(iv) $(-3\sqrt{3}-\frac{1}{2}\sqrt{10}+5+2\sqrt{3}-\sqrt{15})$ (v) $(-3\sqrt{5}-\frac{1}{2}\sqrt{10}+5+2\sqrt{3}-\sqrt{15})$

15. Simplify $\frac{\sqrt{8}}{(-\sqrt{7}+\sqrt{6})} + \frac{(-\sqrt{6})}{(-\sqrt{7}+\sqrt{2})} + \frac{(-\sqrt{6})}{(\sqrt{4}+\sqrt{7})}$

(i) $(-2\sqrt{14}-\frac{18}{5}\sqrt{3}-\frac{2}{15}\sqrt{42}+\frac{2}{3}\sqrt{6})$ (ii) $(-2\sqrt{14}-\frac{18}{5}\sqrt{3}-\frac{2}{15}\sqrt{42}+\frac{2}{3}\sqrt{9})$

(iii) $(-2\sqrt{11}-\frac{18}{5}\sqrt{3}-\frac{2}{15}\sqrt{42}+\frac{2}{3}\sqrt{6})$ (iv) $(-2\sqrt{14}-\frac{18}{5}\sqrt{3}-\frac{2}{15}\sqrt{42}+\frac{2}{3}\sqrt{6})$

(v) $(-2\sqrt{14}-\frac{18}{5}\sqrt{3}-\frac{2}{15}\sqrt{42}+\frac{2}{3}\sqrt{6})$

Assignment Key

1) (i)	2) (v)	3) (iv)	4) (iv)	5) (iv)	6) (i)
7) (ii)	8) (iv)	9) (i)	10) (i)	11) (i)	12) (iv)
13) (v)	14) (v)	15) (v)			