EduSahara™ Assignment

Name : Rationalising the Denominator

Chapter : Rational and Irrational Numbers

Grade : ICSE Grade IX

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1. $8\sqrt{4} \div 4\sqrt{5} =$

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

2. $(8\sqrt{8}-8\sqrt{5}) \div (-6\sqrt{7}+9\sqrt{9}) =$

(i) $(\frac{32}{159}\sqrt{14}-\frac{16}{159}\sqrt{35}+\frac{48}{53}\sqrt{2}-\frac{24}{53}\sqrt{8})$ (ii) $(\frac{32}{159}\sqrt{14}-\frac{16}{159}\sqrt[4]{35}+\frac{48}{53}\sqrt{2}-\frac{24}{53}\sqrt{5})$

(iii) $(\frac{32}{159}\sqrt{14}-\frac{16}{159}\sqrt{35}+\frac{48}{53}\sqrt[4]{2}-\frac{24}{53}\sqrt{5})$ (iv) $(\frac{32}{159}\sqrt{12}-\frac{16}{159}\sqrt{35}+\frac{48}{53}\sqrt{2}-\frac{24}{53}\sqrt{5})$

(v) $(\frac{32}{159}\sqrt{14}-\frac{16}{159}\sqrt{35}+\frac{48}{53}\sqrt{2}-\frac{24}{53}\sqrt{5})$

3. The rationalising factor of $9\sqrt{77} =$

(i) $\sqrt{79}$ (ii) $\sqrt{77}$ (iii) 77 (iv) $\sqrt[4]{77}$ (v) $\sqrt{74}$

4. The rationalising factor of $(-6\sqrt{4}-3\sqrt{2}) =$

(i) $(-10+3\sqrt{2})$ (ii) $(-12+3\sqrt{2})$ (iii) $(-12+3\sqrt[4]{2})$ (iv) $(-14+3\sqrt{2})$ (v) $(-12+6)$

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

(i) $(-\frac{3}{4})$ (ii) $\frac{1}{4}$ (iii) $(-\frac{1}{2})$ (iv) $(-\frac{1}{4})$ (v) $(-\frac{1}{6})$

6. Rationalise the denominator of $\frac{1}{(\sqrt{6}-\sqrt{4})}$

(i) $(\frac{1}{2}\sqrt{8}+1)$ (ii) $(\frac{1}{2}\sqrt{6}+1)$ (iii) $(\frac{1}{2}\sqrt{6}+2)$ (iv) $(\frac{1}{2}\sqrt{6}+0)$ (v) $(\frac{1}{2}\sqrt{3}+1)$

7. Rationalise the denominator of $\frac{1}{(-8\sqrt{6}+6\sqrt{3})}$

(i) $(-\frac{2}{69}\sqrt{6}-\frac{1}{46}\sqrt{3})$ (ii) $(-\frac{2}{69}\sqrt{6}-\frac{1}{46}\sqrt[4]{3})$ (iii) $(-\frac{2}{69}\sqrt{6}-\frac{3}{46})$ (iv) $(-\frac{2}{69}\sqrt{4}-\frac{1}{46}\sqrt{3})$

(v) $(-\frac{2}{69}\sqrt{9}-\frac{1}{46}\sqrt{3})$

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

(i) $(-\frac{1}{6}\sqrt{3}+\frac{1}{12}\sqrt{28}+\frac{1}{4}\sqrt{2})$ (ii) $(-\frac{1}{6}\sqrt{3}+\frac{1}{12}\sqrt{30}+\frac{1}{2})$ (iii) $(-\frac{1}{6}\sqrt{3}+\frac{1}{12}\sqrt{30}+\frac{1}{4}\sqrt[4]{2})$

(iv) $(-\frac{1}{6}\sqrt{3}+\frac{1}{12}\sqrt{33}+\frac{1}{4}\sqrt{2})$ (v) $(-\frac{1}{6}\sqrt{3}+\frac{1}{12}\sqrt{30}+\frac{1}{4}\sqrt{2})$

9. Rationalise the denominator of $\frac{1}{(4\sqrt{2}-6-5\sqrt{3})}$

(i) $(\frac{316}{4559}\sqrt{2}-\frac{426}{4561}+\frac{35}{4559}\sqrt{3}-\frac{240}{4559}\sqrt{6})$ (ii) $(\frac{316}{4559}\sqrt{2}-\frac{426}{4559}+\frac{35}{4559}\sqrt{3}-\frac{240}{4559}\sqrt{8})$

(iii) $(\frac{316}{4559}\sqrt{2}-\frac{426}{4559}+\frac{35}{4559}\sqrt[4]{3}-\frac{240}{4559}\sqrt{6})$ (iv) $(\frac{316}{4559}\sqrt{\frac{1}{2}}-\frac{426}{4559}+\frac{35}{4559}\sqrt{3}-\frac{240}{4559}\sqrt{6})$

(v) $(\frac{316}{4559}\sqrt{2}-\frac{426}{4559}+\frac{35}{4559}\sqrt{3}-\frac{240}{4559}\sqrt{6})$

10. Rationalise the denominator of $\frac{(\sqrt{2}+\sqrt{9})}{(\sqrt{4}+\sqrt{7})} =$

(i) $(-\frac{2}{3}\sqrt{2}-2+\frac{1}{3}\sqrt{14}+\sqrt{10})$ (ii) $(-\frac{2}{3}\sqrt{2}-2+\frac{1}{3}\sqrt{14}+\sqrt{7})$ (iii) $(-\frac{2}{3}\sqrt{2}-1+\frac{1}{3}\sqrt{14}+\sqrt{7})$

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

11. Rationalise the denominator of $\frac{(-\sqrt{3}+\sqrt{8})}{(3\sqrt{8}+\sqrt{4})} =$

(i) $(-\frac{3}{34}\sqrt{4}+\frac{6}{17}+\frac{1}{34}\sqrt{3}-\frac{1}{17}\sqrt{2})$ (ii) $(-\frac{3}{34}\sqrt{6}+\frac{6}{19}+\frac{1}{34}\sqrt{3}-\frac{1}{17}\sqrt{2})$ (iii) $(-\frac{3}{34}\sqrt{6}+\frac{6}{17}+\frac{1}{34}\sqrt[4]{3}-\frac{1}{17}\sqrt{2})$

(iv) $(-\frac{3}{34}\sqrt{6}+\frac{6}{17}+\frac{1}{34}\sqrt{3}-\frac{1}{17}\sqrt{5})$ (v) $(-\frac{3}{34}\sqrt{6}+\frac{6}{17}+\frac{1}{34}\sqrt{3}-\frac{1}{17}\sqrt{2})$

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

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

(iv) $(\frac{1}{2}\sqrt{6}+\frac{1}{2}\sqrt{10}+\sqrt[4]{15}-4)$ (v) $(\frac{1}{2}\sqrt{6}+\frac{1}{2}\sqrt[4]{10}+\sqrt{15}-4)$

13. Simplify $\frac{\sqrt{4}}{(\sqrt{5}-\sqrt{2})} - \frac{\sqrt{7}}{(\sqrt{9}-\sqrt{2})} + \frac{(-\sqrt{9})}{(-\sqrt{9}-\sqrt{2})}$

(i) $(\frac{2}{3}\sqrt{5}+\frac{5}{21}\sqrt[4]{2}-\frac{3}{7}\sqrt{7}-\frac{1}{7}\sqrt{14}+\frac{9}{7})$ (ii) $(\frac{2}{3}\sqrt{3}+\frac{5}{21}\sqrt{2}-\frac{3}{7}\sqrt{7}-\frac{1}{7}\sqrt{14}+\frac{9}{7})$

(iii) $(\frac{2}{3}\sqrt{5}+\frac{5}{21}\sqrt{2}-\frac{3}{7}\sqrt[4]{7}-\frac{1}{7}\sqrt{14}+\frac{9}{7})$ (iv) $(\frac{2}{3}\sqrt{5}+\frac{5}{21}\sqrt{2}-\frac{3}{7}\sqrt{7}-\frac{1}{7}\sqrt{16}+\frac{9}{7})$

(v) $(\frac{2}{3}\sqrt{5}+\frac{5}{21}\sqrt{2}-\frac{3}{7}\sqrt{7}-\frac{1}{7}\sqrt{14}+\frac{9}{7})$

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

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

(iv) $(\frac{5}{3}\sqrt{2}-2-\frac{1}{2}\sqrt{10}+\frac{1}{3}\sqrt{5})$ (v) $(\frac{5}{3}\sqrt{2}-2-\frac{1}{2}\sqrt{10}+\frac{1}{3}\sqrt{7})$

15. Simplify $\frac{\sqrt{5}}{(-\sqrt{4}-\sqrt{8})} + \frac{\sqrt{3}}{(-\sqrt{9}-\sqrt{3})} + \frac{\sqrt{9}}{(\sqrt{3}-\sqrt{5})}$

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

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

Assignment Key

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

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