

EduSahara™ Learning Center Assignment**Grade : Class IX, ICSE****Chapter : Rational and Irrational Numbers****Name : Rationalising the Denominator**

1. $3\sqrt{5} \div 7\sqrt{3} =$

(i) $\frac{1}{7}\sqrt{17}$ (ii) $\frac{15}{7}$ (iii) $\frac{1}{7}\sqrt[4]{15}$ (iv) $\frac{1}{7}\sqrt{12}$ (v) $\frac{1}{7}\sqrt{15}$

2. $(2\sqrt{3} + 9\sqrt{5}) \div (8\sqrt{8} - 4\sqrt{7}) =$

(i) $(\frac{2}{25}\sqrt{6} + \frac{9}{25}\sqrt{10} + \frac{1}{50}\sqrt{21} + \frac{9}{100}\sqrt{38})$

(ii) $(\frac{2}{25}\sqrt{6} + \frac{9}{25}\sqrt[4]{10} + \frac{1}{50}\sqrt{21} + \frac{9}{100}\sqrt{35})$

(iii) $(\frac{2}{25}\sqrt{6} + \frac{9}{25}\sqrt{10} + \frac{1}{50}\sqrt{21} + \frac{9}{100}\sqrt{35})$

(iv) $(\frac{2}{25}\sqrt{6} + \frac{9}{25}\sqrt{10} + \frac{1}{50}\sqrt[4]{21} + \frac{9}{100}\sqrt{35})$

(v) $(\frac{2}{25}\sqrt{3} + \frac{9}{25}\sqrt{10} + \frac{1}{50}\sqrt{21} + \frac{9}{100}\sqrt{35})$

3. The rationalising factor of $(-8\sqrt{50}) =$

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

4. The rationalising factor of $(16\sqrt{2} - 7\sqrt{5}) =$

(i) $(16\sqrt{2} + 35)$ (ii) $(16\sqrt{2} + 7\sqrt{5})$ (iii) $(16\sqrt{5} + 7\sqrt{5})$

(iv) $(16\sqrt{2} + 7\sqrt[4]{5})$ (v) $(16\sqrt{-1} + 7\sqrt{5})$

5. Rationalise the denominator of $\frac{1}{7\sqrt{4}}$

(i) $\frac{1}{14}$ (ii) $(-\frac{1}{14})$ (iii) $\frac{3}{14}$ (iv) $\frac{1}{16}$ (v) $\frac{1}{12}$

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

(i) $(\frac{1}{5}\sqrt{2} - \frac{1}{5}\sqrt{7})$ (ii) $(\frac{1}{5}\sqrt{4} - \frac{1}{5}\sqrt{7})$ (iii) $(\frac{1}{5}\sqrt{2} - \frac{1}{5}\sqrt{7})$

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

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

(i) $(-\frac{2}{3} - \frac{1}{2}\sqrt{2})$ (ii) $(0 - \frac{1}{2}\sqrt{2})$ (iii) $(-\frac{2}{3} - 1)$

(iv) $(-\frac{2}{3} - \frac{1}{2}\sqrt{2})$ (v) $(-\frac{4}{3} - \frac{1}{2}\sqrt{2})$

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

(i) $(\frac{4}{31} - \frac{7}{31}\sqrt{2} + \frac{1}{31}\sqrt{5} + \frac{4}{31}\sqrt{10})$

(ii) $(\frac{6}{31} - \frac{7}{31}\sqrt{2} + \frac{1}{31}\sqrt{5} + \frac{4}{31}\sqrt{13})$

(iii) $(\frac{6}{31} - \frac{7}{31}\sqrt{2} + \frac{1}{31}\sqrt{5} + \frac{4}{31}\sqrt{10})$

(iv) $(\frac{6}{31} - \frac{7}{31}\sqrt{2} + \frac{1}{31}\sqrt{5} + \frac{4}{31}\sqrt{10})$

$$(v) \left(\frac{6}{31} - \frac{7}{31} \sqrt[4]{2} + \frac{1}{31} \sqrt{5} + \frac{4}{31} \sqrt{10} \right)$$

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

$$(i) \left(-\frac{138}{71} - \frac{107}{71} \sqrt{2} + \frac{63}{71} \sqrt{5} + \frac{48}{71} \sqrt{10} \right)$$

$$(ii) \left(-\frac{136}{71} - \frac{107}{71} \sqrt{2} + \frac{63}{71} \sqrt{5} + \frac{48}{71} \sqrt{10} \right)$$

$$(iii) \left(-\frac{136}{71} - \frac{107}{71} \sqrt{2} + \frac{63}{71} \sqrt[4]{5} + \frac{48}{71} \sqrt{10} \right)$$

$$(iv) \left(-\frac{136}{71} - \frac{107}{71} \sqrt[4]{2} + \frac{63}{71} \sqrt{5} + \frac{48}{71} \sqrt{10} \right)$$

$$(v) \left(-\frac{136}{71} - \frac{107}{71} \sqrt{2} + \frac{63}{71} \sqrt{5} + \frac{48}{71} \sqrt{12} \right)$$

10. Rationalise the denominator of $\frac{(-\sqrt{4} - \sqrt{2})}{(\sqrt{4} + \sqrt{8})} =$

$$(i) \left(-\frac{1}{2} \sqrt{4} \right)$$

$$(ii) (-1)$$

$$(iii) \left(-\frac{1}{2} \sqrt{\frac{1}{2}} \right)$$

$$(iv) \left(-\frac{1}{2} \sqrt{2} \right)$$

$$(v) \left(-\frac{1}{2} \sqrt[4]{2} \right)$$

11. Rationalise the denominator of $\left(-4\sqrt{4} - 4\sqrt{6} \right) =$

$$(-2\sqrt{7} + \sqrt{9})$$

$$(i) \left(\frac{16}{19}\sqrt{4} + \frac{8}{19}\sqrt{42} + \frac{24}{19} + \frac{12}{19}\sqrt{6} \right)$$

$$(ii) \left(\frac{16}{19}\sqrt{7} + \frac{8}{19}\sqrt{42} + \frac{26}{21} + \frac{12}{19}\sqrt{6} \right)$$

$$(iii) \left(\frac{16}{19}\sqrt{7} + \frac{8}{19}\sqrt{42} + \frac{24}{19} + \frac{12}{19}\sqrt{6} \right)$$

$$(iv) \left(\frac{16}{19}\sqrt{7} + \frac{8}{19}\sqrt[4]{42} + \frac{24}{19} + \frac{12}{19}\sqrt{6} \right)$$

$$(v) \left(\frac{16}{19}\sqrt{7} + \frac{8}{19}\sqrt{42} + \frac{24}{19} + \frac{12}{19}\sqrt{9} \right)$$

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

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

$$(ii) (-2\sqrt{5} - \sqrt{10} + 5 + 2\sqrt{3})$$

$$(iii) (-2\sqrt{5} - \sqrt{10} + 4 + 2\sqrt{5})$$

$$(iv) (-2\sqrt{5} - \sqrt{10} + 4 + 2\sqrt{3})$$

$$(v) (-2\sqrt{2} - \sqrt{10} + 4 + 2\sqrt{3})$$

$$13. \text{ Simplify } \frac{(-\sqrt{3})}{(-\sqrt{4} + \sqrt{2})} + \frac{(-\sqrt{3})}{(-\sqrt{3} - \sqrt{5})} + \frac{\sqrt{9}}{(\sqrt{9} - \sqrt{3})}$$

$$(i) \left(\frac{3}{2} - \frac{1}{3} + \frac{1}{2} - \frac{1}{6} + \frac{1}{2} - \frac{1}{15} \right)$$

$$= \sqrt{3} - \sqrt{3} - \sqrt{15}$$

$$(ii) \left(\frac{3}{2} \sqrt{3} + \frac{1}{2} \sqrt{3} + \frac{1}{2} \sqrt{15} \right)$$

$$(iii) \left(\frac{3}{2} \sqrt{3} + \frac{1}{2} \sqrt{6} + \frac{1}{2} \sqrt{15} \right)$$

$$(iv) \left(\frac{3}{2} \sqrt{3} + \frac{1}{2} \sqrt{6} + \frac{15}{2} \right)$$

$$(v) \left(\frac{3}{2} \sqrt{3} + \frac{1}{2} \sqrt{9} + \frac{1}{2} \sqrt{15} \right)$$

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

$$(i) \left(\frac{1}{3} \sqrt{13} - \frac{5}{6} \sqrt{6} + \frac{2}{3} \sqrt{2} + \frac{2}{3} \sqrt{5} + \frac{1}{2} \sqrt{10} \right)$$

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

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

$$(iv) \left(\frac{1}{3} \sqrt{15} - \frac{5}{6} \sqrt{6} + \frac{2}{3} \sqrt{2} + \frac{2}{3} \sqrt{7} + \frac{1}{2} \sqrt{10} \right)$$

$$(v) \left(\frac{1}{3} \sqrt{15} - \frac{5}{6} \sqrt{6} + \frac{2}{3} \sqrt{2} + \frac{2}{3} \sqrt{5} + \frac{1}{2} \sqrt{10} \right)$$

$$15. \text{ Simplify } \frac{(-\sqrt{2})}{(-\sqrt{2} + \sqrt{7})} - \frac{\sqrt{3}}{(\sqrt{5} - \sqrt{6})} - \frac{\sqrt{4}}{(\sqrt{8} - \sqrt{7})}$$

$$(i) \left(-\frac{2}{5} - \frac{1}{5} \sqrt{14} + \sqrt{15} - \sqrt{5} - 2 \sqrt{7} \right)$$

$$(ii) \left(-\frac{2}{5} - \frac{1}{5} \sqrt{14} + \sqrt{15} - \sqrt{2} - 2 \sqrt{7} \right)$$

$$(iii) \left(\frac{2}{5} - \frac{1}{5} \sqrt{14} + \sqrt{15} - \sqrt{2} - 2 \sqrt{7} \right)$$

$$-\frac{5}{5} - \frac{5}{5} \sqrt{14} + \sqrt{15} - \sqrt{2} - 2\sqrt{7}$$

$$(iv) \left(-\frac{2}{5} - \frac{1}{5} \sqrt{14} + \sqrt{15} - \sqrt{2} - 2\sqrt{7} \right)$$

$$(v) \left(-\frac{4}{5} - \frac{1}{5} \sqrt{14} + \sqrt{15} - \sqrt{2} - 2\sqrt{7} \right)$$

Assignment Key

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