RD Sharma Class 9 Solutions Maths Chapter 3: This RD Sharma Solutions for Class 9 Maths Chapter 3 – Rationalisation is really important for Class 9 students.This Chapter is all about different algebraic identities and how to get rid of radicals in the denominator of fractions. This process is called rationalisation. In this chapter, students learn how to simplify algebraic expressions using these identities. It's important to remember all the identities before trying any rationalisation question.

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RD Sharma Class 9 Solutions Maths Chapter 3 Rationalisation PDF

You can find the PDF link for RD Sharma Class 9 Solutions Maths Chapter 3 on Rationalisation below. Just click the link to access the solutions and start studying. These solutions are really helpful for understanding the chapter better and practicing different problems.

RD Sharma Class 9 Solutions Maths Chapter 3 Rationalisation PDF

RD Sharma Class 9 Solutions Maths Chapter 3 Rationalisation

The solutions for RD Sharma Class 9 Maths Chapter 3 on Rationalisation are provided below. These solutions are designed to help you understand the concepts and solve problems effectively.

By going through these solutions, you can strengthen your grasp on the topic and improve your problem-solving skills. Whether you're preparing for exams or just want to enhance your understanding of rationalisation, these solutions can be a valuable resource.

Exercise 3.1

Question 1: Simplify each of the following:

(i) $\sqrt[3]{4} \times \sqrt[3]{16}$

(ii) $\frac{\sqrt[4]{1250}}{\sqrt[4]{2}}$

Solution:

(i)

Using: $\sqrt[n]{a} \times \sqrt[n]{b} = \sqrt[n]{a \times b}$

$= \sqrt[3]{4 \times 16}$

$= \sqrt[3]{64}$

$= \sqrt[3]{4^3}$

$= (4^3)^{\frac{1}{3}}$

$= 4$

(ii)

(Note: $\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$)

$= \sqrt[4]{\frac{1250}{2}}$

$= \sqrt[4]{\frac{2 \times 625}{2}}$

$= \sqrt[4]{625}$

$= \sqrt[4]{5^4}$

$= 5^{(4 \times \frac{1}{4})}$

$= 5$

Question 2: Simplify the following expressions:

(i) (4 + √7) (3 + √2)

(ii) (3 + √3)(5- √2)

(iii) (√5 -2)(√3 – √5)

Solution:

(i) (4 + √7) (3 + √2)

= *12 + 4√2 + 3√7 + √14*

(ii) (3 + √3)(5- √2)

= *15 – 3√2 + 5√3 – √6*

(iii) (√5 -2)(√3 – √5)

= √15 – √25 – 2√3 + 2√5

= *√15 – 5 – 2√3 + 2√5*

Question 3: Simplify the following expressions:

(i) (11 + √11) (11 – √11)

(ii) (5 + √7) (5 –√7)

(iii) (√8 – √2) (√8 + √2)

(iv) (3 + √3) (3 – √3)

(v) (√5 – √2) (√5 + √2)

Solution:

Using Identity: $(a – b)(a+b) = a^2 – b^2$

(i) (11 + √11) (11 – √11)

= $11^2 – (\sqrt{11})^2$

= 121 – 11

= *110*

(ii) (5 + √7) (5 –√7)

= $(5^2 – (\sqrt{7})^2)$

= 25 – 7 = *18*

(iii) (√8 – √2) (√8 + √2)

= $(\sqrt{8})^2 – (\sqrt{2})^2$

= 8 -2

= 6

(iv) $(3 + \sqrt{3})(3 - \sqrt{3})$

$= (3)^2 - (\sqrt{3})^2$

$= 9 - 3$

= 6

(v) $(\sqrt{5} - \sqrt{2})(\sqrt{5} + \sqrt{2})$

$=(\sqrt{5})^2 - (\sqrt{2})^2$

$= 5 - 2$

= 3

Question 4: Simplify the following expressions:

(i) $(\sqrt{3} + \sqrt{7})^2$

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

(iii) $(2\sqrt{5} + 3\sqrt{2})^2$

Solution:

Using identities: $(a - b)^2 = a^2 + b^2 - 2ab$ and $(a + b)^2 = a^2 + b^2 + 2ab$

(i) $(\sqrt{3} + \sqrt{7})^2$

$= (\sqrt{3})^2 + (\sqrt{7})^2 + 2(\sqrt{3})(\sqrt{7})$

$= 3 + 7 + 2\sqrt{21}$

$= 10 + 2\sqrt{21}$

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

$= (\sqrt{5})^2 + (\sqrt{3})^2 - 2(\sqrt{5})(\sqrt{3})$

$= 5 + 3 - 2\sqrt{15}$

$= 8 - 2\sqrt{15}$

(iii) $(2\sqrt{5} + 3\sqrt{2})^2$

$= (2\sqrt{5})^2 + (3\sqrt{2})^2 + 2(2\sqrt{5})(3\sqrt{2})$

$= 20 + 18 + 12\sqrt{10}$

$= 38 + 12\sqrt{10}$

Exercise 3.2

Question 1: Rationalise the denominators of each of the following (i – vii):

(i) 3/ √5 (ii) 3/(2 √5) (iii) 1/ √12 (iv) √2/ √5

(v) (√3 + 1)/ √2 (vi) (√2 + √5)/ √3 (vii) 3 √2/ √5

Solution:

(i) Multiply both the numerator and denominator with the same number to rationalise the denominator.

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

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

$= 3\sqrt{5}/5$

(ii) Multiply both the numerator and denominator with the same number to rationalise the denominator.

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

$$= \frac{3\sqrt{5}}{2\times 5} = \frac{3\sqrt{5}}{10} = \frac{3}{10}\sqrt{5}$$

(iii) Multiply both the numerator and denominator with the same number to rationalise the denominator.

$$\frac{1}{\sqrt{12}} = \frac{1}{\sqrt{4 \times 3}} = \frac{1}{2\sqrt{3}}$$

$$= \frac{1 \times \sqrt{3}}{2\sqrt{3} \times \sqrt{3}} = \frac{\sqrt{3}}{2 \times 3} = \frac{\sqrt{3}}{6}$$

(iv) Multiply both the numerator and denominator with the same number to rationalise the denominator.

$$\frac{\sqrt{2}}{\sqrt{5}} = \frac{\sqrt{2} \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} = \frac{\sqrt{10}}{5} = \frac{1}{5}\sqrt{10}$$

(v) Multiply both the numerator and denominator with the same number to rationalise the denominator.

$$\frac{\sqrt{3}+1}{\sqrt{2}} = \frac{(\sqrt{3}+1)\sqrt{2}}{\sqrt{2} \times \sqrt{2}} = \frac{\sqrt{6}+\sqrt{2}}{2}$$

(vi) Multiply both the numerator and denominator with the same number to rationalise the denominator.

$$\frac{\sqrt{2}+\sqrt{5}}{\sqrt{3}} = \frac{(\sqrt{2}+\sqrt{5}) \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}}$$

$$= \frac{\sqrt{6}+\sqrt{15}}{3}$$

(vii) Multiply both the numerator and denominator with the same number to rationalise the denominator.

$$\frac{3\sqrt{2}}{\sqrt{5}} = \frac{3\sqrt{2} \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} = \frac{3 \times \sqrt{10}}{5}$$

$$= \frac{3}{5}\sqrt{10}$$

Question 2: Find the value to three places of decimals of each of the following. It is given that

√2 = 1.414, √3 = 1.732, √5 = 2.236 and √10 = 3.162

(i) $\frac{2}{\sqrt{3}}$ (ii) $\frac{3}{\sqrt{10}}$

(iii) $\frac{\sqrt{5}+1}{\sqrt{2}}$ (iv) $\frac{\sqrt{10}+\sqrt{15}}{\sqrt{2}}$

(v) $\frac{2+\sqrt{3}}{3}$ (vi) $\frac{\sqrt{2}-1}{\sqrt{5}}$

Solution:

(i) $\frac{2}{\sqrt{3}} = \frac{2 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}}$

$= \frac{2\sqrt{3}}{3} = \frac{2 \times 1.732}{3} = \frac{3.464}{3} = 1.154$

(ii) $\frac{3}{\sqrt{10}} = \frac{3 \times \sqrt{10}}{\sqrt{10} \times \sqrt{10}} = \frac{3\sqrt{10}}{10}$

$= \frac{3(3.162)}{10} = \frac{9.486}{10} = 0.9486$

(iii) $\frac{\sqrt{5}+1}{\sqrt{2}} = \frac{(\sqrt{5}+1) \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}}$

$= \frac{\sqrt{10}+\sqrt{2}}{2} = \frac{3.162+1.414}{2}$

$= \frac{4.576}{2} = 2.288$

(iv) $\frac{\sqrt{10}+\sqrt{15}}{\sqrt{2}} = \frac{(\sqrt{10}+\sqrt{15})\sqrt{2}}{\sqrt{2} \times \sqrt{2}}$

$= \frac{\sqrt{20}+\sqrt{30}}{2} = \frac{2\sqrt{5}+\sqrt{10} \times \sqrt{3}}{2}$

$= \frac{2(2.236)+3.162 \times 1.732}{2} = 4.974$

(v) $\frac{2+\sqrt{3}}{3} = \frac{2+1.732}{3} = \frac{3.732}{3} = 1.244$

(vi) $\frac{\sqrt{2}-1}{\sqrt{5}} = \frac{(\sqrt{2}-1)\times\sqrt{5}}{\sqrt{5}\times\sqrt{5}}$

$= \frac{\sqrt{10}-\sqrt{5}}{5} = \frac{3.162-2.236}{5}$

$= \frac{0.926}{5} = 0.185$

Question 3: Express each one of the following with a rational denominator:

(i) $\frac{1}{3+\sqrt{2}}$ (ii) $\frac{1}{\sqrt{6}-\sqrt{5}}$ (iii) $\frac{16}{\sqrt{41}-5}$

(iv) $\frac{30}{5\sqrt{3}-3\sqrt{5}}$ (v) $\frac{1}{2\sqrt{5}-\sqrt{3}}$ (vi) $\frac{\sqrt{3}+1}{2\sqrt{2}-\sqrt{3}}$

(vii) $\frac{6-4\sqrt{2}}{6+4\sqrt{2}}$ (viii) $\frac{3\sqrt{2}+1}{2\sqrt{5}-3}$ (ix) $\frac{b^2}{\sqrt{a^2+b^2}+a}$

Solution:

Using identity: $(a + b)(a – b) = a^2 – b^2$

(i) Multiply and divide the given number by $3-\sqrt{2}$

$$\frac{1}{3+\sqrt{2}}$$

$$= \frac{3-\sqrt{2}}{(3+\sqrt{2})(3-\sqrt{2})}$$

$$= \frac{3-\sqrt{2}}{9-2}$$

$$= \frac{3-\sqrt{2}}{7}$$

(ii) Multiply and divide the given number by √6 + √5

$$\frac{1}{\sqrt{6}-\sqrt{5}}$$

$$= \frac{\sqrt{6}+\sqrt{5}}{(\sqrt{6}-\sqrt{5})(\sqrt{6}+\sqrt{5})}$$

$$= \frac{\sqrt{6}+\sqrt{5}}{6-5}$$

$$= \sqrt{6}+\sqrt{5}$$

(iii) Multiply and divide the given number by √41 + 5

$$\frac{16}{\sqrt{41}-5}$$

$$= \frac{16\times(\sqrt{41}+5)}{(\sqrt{41}-5)(\sqrt{41}+5)}$$

$$= \frac{16\sqrt{41}+80}{41-25}$$

$$= \frac{16\sqrt{41}+80}{16}$$

$$= \frac{16(\sqrt{41}+5)}{16}$$

$$= \sqrt{41} + 5$$

(iv) Multiply and divide the given number by 5√3 + 3√5

$$\frac{30}{5\sqrt{3}-3\sqrt{5}}$$

$$= \frac{30\times(5\sqrt{3}+3\sqrt{5})}{(5\sqrt{3}-3\sqrt{5})(5\sqrt{3}+3\sqrt{5})}$$

$$= \frac{30\times(5\sqrt{3}+3\sqrt{5})}{75-45}$$

$$= \frac{30\times(5\sqrt{3}+3\sqrt{5})}{30}$$

$$= 5\sqrt{3} + 3\sqrt{5}$$

(v) Multiply and divide the given number by 2√5 + √3

$$\frac{1}{2\sqrt{5}-\sqrt{3}}$$

$$= \frac{2\sqrt{5}+\sqrt{3}}{(2\sqrt{5}-\sqrt{3})(2\sqrt{5}+\sqrt{3})}$$

$$= \frac{2\sqrt{5}+\sqrt{3}}{20-3}$$

$$= \frac{2\sqrt{5}+\sqrt{3}}{17}$$

(vi) Multiply and divide the given number by $2\sqrt{2} + \sqrt{3}$

$$\frac{\sqrt{3}+1}{2\sqrt{2}-\sqrt{3}}$$

$$= \frac{(\sqrt{3}+1)(2\sqrt{2}+\sqrt{3})}{(2\sqrt{2}+\sqrt{3})(2\sqrt{2}-\sqrt{3})}$$

$$= \frac{(2\sqrt{6}+3+2\sqrt{2}+\sqrt{3})}{8-3}$$

$$= \frac{(2\sqrt{6}+3+2\sqrt{2}+\sqrt{3})}{5}$$

(vii) Multiply and divide the given number by $6 - 4\sqrt{2}$

$$\frac{6-4\sqrt{2}}{6+4\sqrt{2}}$$

$$= \frac{(6-4\sqrt{2})(6-4\sqrt{2})}{(6+4\sqrt{2})(6-4\sqrt{2})}$$

$$= \frac{(6-4\sqrt{2})^2}{36-32}$$

$$= \frac{36-48\sqrt{2}+32}{4}$$

$$= \frac{68-48\sqrt{2}}{4}$$

$$= \frac{4(17-12\sqrt{2})}{4}$$

$$= 17 - 12\sqrt{2}$$

(viii) Multiply and divide the given number by 2√5 + 3

$$\frac{3\sqrt{2}+1}{2\sqrt{5}-3}$$

$$= \frac{(3\sqrt{2}+1)\times(2\sqrt{5}+3)}{(2\sqrt{5}-3)(2\sqrt{5}+3)}$$

$$= \frac{6\sqrt{10}+9\sqrt{2}+2\sqrt{5}+3}{(20-9)}$$

$$= \frac{6\sqrt{10}+9\sqrt{2}+2\sqrt{5}+3}{11}$$

(ix) Multiply and divide the given number by $\sqrt{(a^2+b^2)} - a$

$$\frac{b^2}{\sqrt{(a^2+b^2)}+a}$$

$$= \frac{b^2(\sqrt{(a^2+b^2)}-a)}{(\sqrt{(a^2+b^2)}+a)(\sqrt{(a^2+b^2)}-a)}$$

$$= \frac{b^2(\sqrt{(a^2+b^2)}-a)}{(a^2+b^2)-a^2)}$$

$$= \frac{b^2(\sqrt{(a^2+b^2)}-a)}{b^2}$$

Question 4: Rationales the denominator and simplify:

(i) $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ **(ii)** $\frac{5+2\sqrt{3}}{7+4\sqrt{3}}$ **(iii)** $\frac{1+\sqrt{2}}{3-2\sqrt{2}}$

(iv) $\frac{2\sqrt{6}-\sqrt{5}}{3\sqrt{5}-2\sqrt{6}}$ **(v)** $\frac{4\sqrt{3}+5\sqrt{2}}{\sqrt{48}+\sqrt{18}}$ **(vi)** $\frac{2\sqrt{3}-\sqrt{5}}{2\sqrt{2}+3\sqrt{3}}$

Solution:

[Use identities: (a + b) (a – b) = $a^2 - b^2$; $(a + b)^2 = (a^2 + 2ab + b^2$ and $(a – b)^2 = (a^2 – 2ab + b^2$]

(i) Multiply both numerator and denominator by √3–√2 to rationalise the denominator.

$$\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$$

$$= \frac{(\sqrt{3}-\sqrt{2})(\sqrt{3}-\sqrt{2})}{(\sqrt{3}+\sqrt{2})(\sqrt{3}-\sqrt{2})}$$

$$= \frac{(\sqrt{3}-\sqrt{2})^2}{3-2}$$

$$= \frac{3-2\sqrt{3}\sqrt{2}+2}{1}$$

$$= 5 - 2\sqrt{6}$$

(ii) Multiply both numerator and denominator by 7–4√3 to rationalise the denominator.

$$\frac{5+2\sqrt{3}}{7+4\sqrt{3}}$$

$$= \frac{(5+2\sqrt{3})(7-4\sqrt{3})}{(7+4\sqrt{3})(7-4\sqrt{3})}$$

$$= \frac{(5+2\sqrt{3})(7-4\sqrt{3})}{49-48}$$

$$= 35 - 20\sqrt{3} + 14\sqrt{3} - 24$$

$$= 11 - 6\sqrt{3}$$

(iii) Multiply both numerator and denominator by 3+2√2 to rationalise the denominator.

$$\frac{1+\sqrt{2}}{3-2\sqrt{2}}$$

$$= \frac{(1+\sqrt{2})(3+2\sqrt{2})}{(3-2\sqrt{2})(3+2\sqrt{2})}$$

$$= \frac{(1+\sqrt{2})(3+2\sqrt{2})}{9-8}$$

$$= 3+2\sqrt{2}+3\sqrt{2}+4$$

$$= 7+5\sqrt{2}$$

(iv) Multiply both numerator and denominator by 3√5+2√6 to rationalise the denominator.

$$\frac{2\sqrt{6}-\sqrt{5}}{3\sqrt{5}-2\sqrt{6}}$$

$$= \frac{(2\sqrt{6}-\sqrt{5})(3\sqrt{5}+2\sqrt{6})}{(3\sqrt{5}-2\sqrt{6})(3\sqrt{5}+2\sqrt{6})}$$

$$= \frac{(2\sqrt{6}-\sqrt{5})(3\sqrt{5}+2\sqrt{6})}{45-24}$$

$$= \frac{(2\sqrt{6}-\sqrt{5})(3\sqrt{5}+2\sqrt{6})}{21}$$

$$= \frac{6\sqrt{30}+24-15-2\sqrt{30}}{21}$$

$$= \frac{4\sqrt{30}+9}{21}$$

(v) Multiply both numerator and denominator by √48–√18 to rationalise the denominator.

$$\frac{4\sqrt{3}+5\sqrt{2}}{\sqrt{48}+\sqrt{18}}$$

$$= \frac{(4\sqrt{3}+5\sqrt{2})(\sqrt{48}-\sqrt{18})}{(\sqrt{48}+\sqrt{18})(\sqrt{48}-\sqrt{18})}$$

$$= \frac{(4\sqrt{3}+5\sqrt{2})(\sqrt{48}-\sqrt{18})}{48-18}$$

$$= \frac{48-12\sqrt{6}+20\sqrt{6}-30}{30}$$

$$= \frac{18+8\sqrt{6}}{30}$$

$$= \frac{9+4\sqrt{6}}{15}$$

(vi) Multiply both numerator and denominator by 2√2 – 3√3 to rationalise the denominator.

$$\frac{2\sqrt{3}-\sqrt{5}}{2\sqrt{2}+3\sqrt{3}}$$

$$= \frac{(2\sqrt{3}-\sqrt{5})(2\sqrt{2}-3\sqrt{3})}{(2\sqrt{2}+3\sqrt{3})(2\sqrt{2}-3\sqrt{3})}$$

$$= \frac{(2\sqrt{3}-\sqrt{5})(2\sqrt{2}-3\sqrt{3})}{8-27}$$

$$= \frac{(4\sqrt{6}-2\sqrt{10})-18+3\sqrt{15})}{-19}$$

$$= \frac{(18-4\sqrt{6}+2\sqrt{10}-3\sqrt{15})}{19}$$

Exercise VSAQs

Question 1: Write the value of (2 + √3) (2 – √3).

Solution:

(2 + √3) (2 – √3)

= $(2)^2 - (\sqrt{3})^2$

[Using identity : $(a + b)(a - b) = a^2 - b^2$]

= 4 – 3

= *1*

Question 2: Write the reciprocal of 5 + √2.

Solution:

$$\text{Reciprocal of } 5+\sqrt{2} = \frac{1}{5+\sqrt{2}}$$

Rationalisation of fraction

Multiply and divide given fraction by 5 - √2

$$= \frac{5-\sqrt{2}}{(5+\sqrt{2})(5-\sqrt{2})}$$

$$= \frac{5-\sqrt{2}}{(5)^2-(\sqrt{2})^2}$$

$$= \frac{5-\sqrt{2}}{25-2}$$

$$= \frac{5-\sqrt{2}}{23}$$

Question 3: Write the rationalisation factor of 7 – 3√5.

Solution:

The rationalisation factor of 7 – 3√5 is 7 + 3√5

Question 4: If

$$\frac{\sqrt{3}-1}{\sqrt{3}+1} = x + y\sqrt{3}$$

Find the values of x and y.

Solution:

[Using identities : (a + b)(a – b) = $a^2 – b^2$ and $(a – b)^2 = a^2 + b^2 – 2ab$]

Question 5: If x = √2 – 1, then write the value of 1/x.

Solution:

x = √2 – 1

or 1/x = 1/(√2 – 1)

Rationalising denominator, we have

= 1/(√2 – 1) x (√2 + 1)/(√2 + 1)

= (√2 + 1)/(2-1)

= √2 + *1*

Question 6: Simplify

$$\sqrt{3+2\sqrt{2}}$$

Solution:

$$\sqrt{3+2\sqrt{2}}$$

$$= \sqrt{2+1+2\sqrt{2}}$$

$$= \sqrt{(\sqrt{2})^2 + (1)^2 + 2 \times \sqrt{2} \times 1}$$

$$= \sqrt{(\sqrt{2}+1)^2} = \sqrt{2} + 1$$

[Because: $(a + b)^2 = a^2 + b^2 + 2ab$]

Question 7: Simplify

$\sqrt{3-2\sqrt{2}}$

Solution:

$\sqrt{3-2\sqrt{2}}$

$= \sqrt{2+1-2\sqrt{2}}$

$= \sqrt{(\sqrt{2})^2+(1)^2-2\times\sqrt{2}\times 1}$

$= \sqrt{(\sqrt{2}-1)^2} = \sqrt{2} - 1$

[Because: $(a – b)^2 = a^2 + b^2 – 2ab$]

Question 8: If a = √2 +1, then find the value of a – 1/a.

Solution:

Given: a = √2 + 1

1/a = 1/(√2 + 1)

= 1/(√2 + 1) x (√2 – 1)/(√2 – 1)

= (√2 – 1)/ $((\sqrt{2})^2 – (1)^2)$

= (√2 – 1)/1

= √2 – 1

Now,

a – 1/a = (√2 + 1) – (√2 – 1)

= *2*

Question 9: If x = 2 + √3, find the value of x + 1/x.

Solution:

Given: x = 2 + √3

1/x = 1/(2 + √3)

= 1/(2 + √3) x (2 – √3)/(2 – √3)

= (2 – √3)/ ((2)^2 – (√3)^2)

= (2 – √3)/(4-3)

= (2 – √3)

Now,

x + 1/x = (2 + √3) + (2 – √3)

= *4*

Question 10: Write the rationalisation factor of √5 – 2.

Solution:

The rationalisation factor of √5 – 2 is √5 + 2

Question 11: If x = 3 + 2√2, then find the value of √x – 1/√x.

Solution:

$x = 3 + 2\sqrt{2}$

$$\frac{1}{x} = \frac{1}{3+2\sqrt{2}} = \frac{(3-2\sqrt{2})}{(3+2\sqrt{2})(3-2\sqrt{2})}$$

$$= \frac{3-2\sqrt{2}}{(3)^2-(2\sqrt{2})^2} = \frac{3-2\sqrt{2}}{9-8} = \frac{3-2\sqrt{2}}{1}$$

$$x + \frac{1}{x} = 3 + 2\sqrt{2} + 3 - 2\sqrt{2} = 6$$

Now, $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)^2 = x + \frac{1}{x} - 2$

$$= 6 - 2 = 4 = (2)^2$$

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

RD Sharma Solutions for Class 9 Maths Chapter 3 Rationalisation Summary

In Chapter 3 of Class 9 RD Sharma Solutions, students will encounter significant concepts regarding rationalisation, including:

- Introduction to Rationalisation
- Rationalisation of the Denominator
- Key Algebraic Identities

By studying these concepts, students can become familiar with different problem-solving methods and approach exams with greater confidence. Practising RD Sharma Solutions for Class 9 Maths Chapter 3 on Rationalisation enables students to hone their skills effectively. Therefore, it's advisable for students to diligently solve these solutions to achieve high marks in their annual exams.