

Class: Ten

Subject- Mathematics

Source: Photos of exercise are given below.

Work: Complete all the work of 11.2

Do your work neatly

Surd

EXERCISE 11.2

General section

1. Rationalise the denominators and simplify.

a) $\frac{1}{\sqrt{2} + 1}$ b) $\frac{1}{\sqrt{3} - 2}$ c) $\frac{3}{\sqrt{5} - \sqrt{2}}$ d) $\frac{4}{2\sqrt{3} - \sqrt{2}}$
 e) $\frac{5}{3\sqrt{7} + 2\sqrt{3}}$ f) $\frac{2\sqrt{2}}{\sqrt{6} + \sqrt{3}}$ g) $\frac{5\sqrt{3}}{2\sqrt{3} - \sqrt{2}}$ h) $\frac{4\sqrt{5}}{2\sqrt{3} + \sqrt{5}}$

2. Rationalise the denominators and simplify.

a) $\frac{\sqrt{2} + 1}{\sqrt{2} - 1}$ b) $\frac{\sqrt{3} - 1}{\sqrt{3} + 1}$ c) $\frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ d) $\frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}}$
 e) $\frac{2\sqrt{3} - 3\sqrt{2}}{2\sqrt{3} + 3\sqrt{2}}$ f) $\frac{3\sqrt{5} - \sqrt{3}}{\sqrt{5} - \sqrt{3}}$ g) $\frac{\sqrt{a+b} - \sqrt{a-b}}{\sqrt{a+b} + \sqrt{a-b}}$ h) $\frac{\sqrt{x+1} - \sqrt{x-1}}{\sqrt{x+1} + \sqrt{x-1}}$
 i) $\frac{\sqrt{a+2} - \sqrt{a-2}}{\sqrt{a+2} + \sqrt{a-2}}$ j) $\frac{\sqrt{a+5} + \sqrt{a-5}}{\sqrt{a+5} - \sqrt{a-5}}$ k) $\frac{\sqrt{2}}{\sqrt{2} + \sqrt{3} - \sqrt{5}}$ l) $\frac{2}{\sqrt{3} + \sqrt{2} + 1}$

3. Simplify.

a) $3\sqrt{5} - \frac{1}{\sqrt{5}}$ b) $\frac{7}{\sqrt{3}} + 2\sqrt{3}$ c) $\frac{3}{\sqrt{5}} + \frac{\sqrt{5}}{2}$
 d) $\frac{7}{\sqrt{3}} - \frac{\sqrt{3}}{4}$ e) $\frac{\sqrt{2}}{5} + \frac{3}{\sqrt{2}}$ f) $\frac{\sqrt{7}}{3} + \frac{5}{2\sqrt{7}}$

Creative Section - A

4. Simplify.

a) $\frac{\sqrt{3} + 1}{\sqrt{3} - 1} + \frac{\sqrt{3} - 1}{\sqrt{3} + 1}$ b) $\frac{5 + 3\sqrt{5}}{\sqrt{5} + 2} - \frac{5 - 3\sqrt{5}}{\sqrt{5} - 2}$
 c) $\frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}} + \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ d) $\frac{\sqrt{x} + \sqrt{a}}{\sqrt{x} - \sqrt{a}} - \frac{\sqrt{x} - \sqrt{a}}{\sqrt{x} + \sqrt{a}}$
 e) $\frac{x + \sqrt{x^2 - 1}}{x - \sqrt{x^2 - 1}} - \frac{x - \sqrt{x^2 - 1}}{x + \sqrt{x^2 - 1}}$ f) $\frac{a - \sqrt{a^2 - 1}}{a + \sqrt{a^2 - 1}} + \frac{a + \sqrt{a^2 - 1}}{a - \sqrt{a^2 - 1}}$

5. Simplify.

a) $3\sqrt{20} + \frac{4}{\sqrt{5}} + \frac{\sqrt{5} + 3}{\sqrt{5} - 3}$

b) $\sqrt{72} - \frac{48}{\sqrt{50}} + \frac{45}{\sqrt{128}} + 2\sqrt{98}$

c) $\frac{2\sqrt{10}}{\sqrt{3} + 1} - \frac{2\sqrt{5}}{\sqrt{6} + 2} - \frac{\sqrt{10}}{\sqrt{2} + 1}$

d) $\frac{3\sqrt{2}}{\sqrt{6} + \sqrt{3}} - \frac{4\sqrt{3}}{\sqrt{6} + \sqrt{2}} + \frac{\sqrt{6}}{\sqrt{3} + \sqrt{2}}$

e) $\frac{7\sqrt{3}}{\sqrt{10} + \sqrt{3}} + \frac{2\sqrt{5}}{\sqrt{6} + \sqrt{5}} + \frac{3\sqrt{2}}{\sqrt{15} + 3\sqrt{3}}$

f) $\frac{5\sqrt{2}}{\sqrt{5}(\sqrt{2} + 1)} - \frac{8\sqrt{5}}{\sqrt{10} + \sqrt{2}} + \frac{3\sqrt{10}}{\sqrt{2} + \sqrt{5}}$

Creative Section - B

6. Simplify.

a) $\frac{\sqrt{x+1} + \sqrt{x-1}}{\sqrt{x+1} - \sqrt{x-1}} + \frac{\sqrt{x+1} - \sqrt{x-1}}{\sqrt{x+1} + \sqrt{x-1}}$

b) $\frac{\sqrt{a+b} + \sqrt{a-b}}{\sqrt{a+b} - \sqrt{a-b}} + \frac{\sqrt{a+b} - \sqrt{a-b}}{\sqrt{a+b} + \sqrt{a-b}}$

c) $\frac{\sqrt{2x+3} + \sqrt{2x-3}}{\sqrt{2x+3} - \sqrt{2x-3}} + \frac{\sqrt{2x+3} - \sqrt{2x-3}}{\sqrt{2x+3} + \sqrt{2x-3}}$

d) $\frac{\sqrt{x^2+2} + \sqrt{x^2-2}}{\sqrt{x^2+2} - \sqrt{x^2-2}} + \frac{\sqrt{x^2+2} - \sqrt{x^2-2}}{\sqrt{x^2+2} + \sqrt{x^2-2}}$

11.7 Simple surd equations

Let's consider an equation $\sqrt{x} = 5$.

Here, the unknown variable is a surd. Such an equation is known as the **surd equation**.

To solve a surd equation, we should remove the radical from the variable. For this, we should give n^{th} power to both sides of the equation to remove n^{th} order of radical.

\therefore If $\sqrt[n]{x} = a$, then

$$\left(\sqrt[n]{x}\right)^n = a^n$$

i.e. $x^{\frac{n}{n}} = a^n$

i.e. $x = a^n$.

Worked-out examples

Example 1: Solve $\sqrt{x+5} = 3$.

Solution:

Here, $\sqrt{x+5} = 3$

Squaring both sides of the equation, we get,

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

or, $x + 5 = 9$

or, $x = 9 - 5$

or, $x = 4$

Now, substituting $x = 4$ in the original equation, we get,

$$\sqrt{4+5} = 3$$

or, $\sqrt{9} = 3$

Subject- HPE

Homework will be given in Google classroom.

Subject- Science

1. Which gland is called mixed gland and why?
2. Hormone shows the distance action but enzyme show local action, why?
3. Write the name of hormones and their functions produced by testes and ovary.
4. What happens in the hypo secretion of insulin hormone and why?

विषय - नेपाली

१)कुनै एक शीर्षकमा वाद ववाद लेख्नुहोस्। क)वैदे शक रोजगारभन्दा स्थानीय रोजगार वेस। ख)इन्टरनेट अ भशाप होइन वरदान हो।

२)वाक्य संश्लेषण \वाक्य वश्लेषण र वाक्य परिवर्तन अभ्यास गर्नुहोस्

The End.