

Class: Ten

Subject- Mathematics

Source: photos of exercise are given below with blue boarders.

Work: Complete all the work of 11.2

Do your work neatly

Pages 159 & 160 for class 10

Samb

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

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

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

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

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

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

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

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

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, $\sqrt{9} = 3$

or, $3 = 3$ which is true.

Subject- Computer

1) Answer the following questions.

- a. What is mobile computing? Write its advantages and disadvantages.
- b. What is Internet of Things (IoT)?

2. Write the full forms of the following:

- | | | | |
|---------|---------|---------|--------|
| a. IaaS | b. PaaS | c. SaaS | d. AI |
| e. VRML | f. G2C | g. G2B | h. G2G |
| i. G2E | j. IoT | | |

3. State whether the following statements are true or false:

- a. Technology has enabled people to communicate and interact in more effective and convenient ways.
- b. Gmail users can access files and applications hosted by Google using any device that can access the Internet.
- c. A Public Cloud is the cloud computing that is owned by a single organization.
- d. Infrastructure as a service of cloud computing provides software applications over the Internet.
- e. The artificial intelligence (AI) is the ability that understand natural language but can think and learn.
- f. Echo, Siri, Cortana, etc. are some popular virtual personal assistants that use AI.
- g. Virtual Reality is the real environment that presents everything fake.

Subject- HPE

Homework will be given in Google classroom.

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The End.