Riviera International Academy

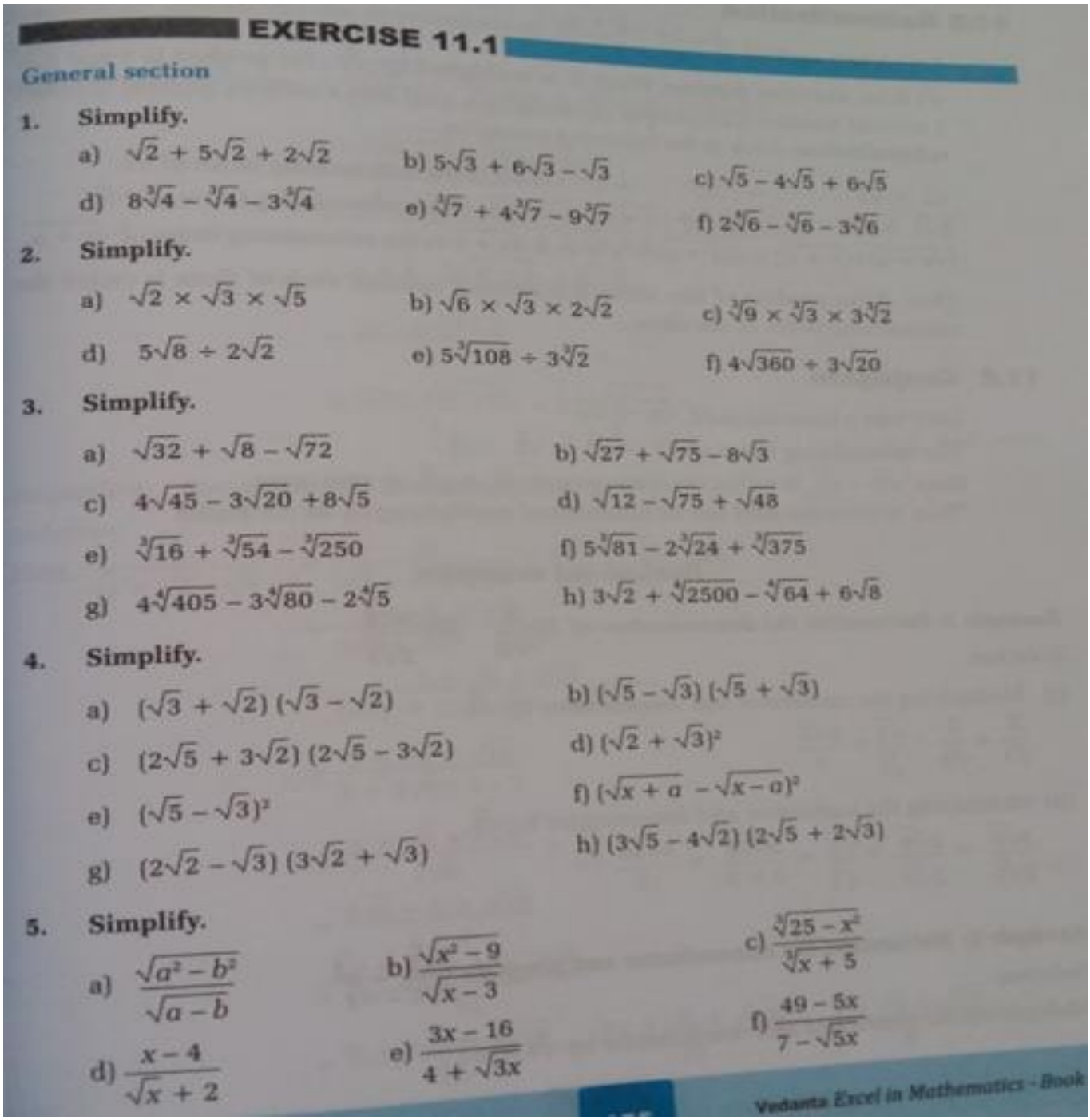
Assignment-2077

(Ashwin 11, 2077, Sunday)

Class: Ten

Subject- Mathematics

Source: Photos of exercise are given below.
Work: Complete all the work of 11.1
Do your work neatly



EXERCISE 11.1

General section

1. Simplify.

a) $\sqrt{2} + 5\sqrt{2} + 2\sqrt{2}$ b) $5\sqrt{3} + 6\sqrt{3} - \sqrt{3}$ c) $\sqrt{5} - 4\sqrt{5} + 6\sqrt{5}$

d) $8\sqrt[3]{4} - \sqrt[3]{4} - 3\sqrt[3]{4}$ e) $\sqrt[3]{7} + 4\sqrt[3]{7} - 9\sqrt[3]{7}$ f) $2\sqrt[4]{6} - \sqrt[4]{6} - 3\sqrt[4]{6}$

2. Simplify.

a) $\sqrt{2} \times \sqrt{3} \times \sqrt{5}$ b) $\sqrt{6} \times \sqrt{3} \times 2\sqrt{2}$ c) $\sqrt[3]{9} \times \sqrt[3]{3} \times 3\sqrt[3]{2}$

d) $5\sqrt{8} \div 2\sqrt{2}$ e) $5\sqrt[3]{108} \div 3\sqrt[3]{2}$ f) $4\sqrt{360} \div 3\sqrt{20}$

3. Simplify.

a) $\sqrt{32} + \sqrt{8} - \sqrt{72}$ b) $\sqrt{27} + \sqrt{75} - 8\sqrt{3}$

c) $4\sqrt{45} - 3\sqrt{20} + 8\sqrt{5}$ d) $\sqrt{12} - \sqrt{75} + \sqrt{48}$

e) $\sqrt[3]{16} + \sqrt[3]{54} - \sqrt[3]{250}$ f) $5\sqrt[3]{81} - 2\sqrt[3]{24} + \sqrt[3]{375}$

g) $4\sqrt[4]{405} - 3\sqrt[4]{80} - 2\sqrt[4]{5}$ h) $3\sqrt{2} + \sqrt[4]{2500} - \sqrt[4]{64} + 6\sqrt{8}$

4. Simplify.

a) $(\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})$ b) $(\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$

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

e) $(\sqrt{5} - \sqrt{3})^2$ f) $(\sqrt{x+a} - \sqrt{x-a})^2$

g) $(2\sqrt{2} - \sqrt{3})(3\sqrt{2} + \sqrt{3})$ h) $(3\sqrt{5} - 4\sqrt{2})(2\sqrt{5} + 2\sqrt{3})$

5. Simplify.

a) $\dfrac{\sqrt{a^2 - b^2}}{\sqrt{a-b}}$ b) $\dfrac{\sqrt{x^2 - 9}}{\sqrt{x-3}}$ c) $\dfrac{\sqrt[3]{25 - x^2}}{\sqrt[3]{x+5}}$

d) $\dfrac{x-4}{\sqrt{x}+2}$ e) $\dfrac{3x - 16}{4 + \sqrt{3x}}$ f) $\dfrac{49 - 5x}{7 - \sqrt{5x}}$

Vedanta Excel in Mathematics - Book

6. **Simplify.**

a) $\frac{\sqrt{24}+\sqrt{54}}{10\sqrt{6}}$ b) $\frac{4\sqrt[3]{54}-2\sqrt[3]{250}}{6\sqrt[3]{128}}$ c) $\frac{2\sqrt{75}+4\sqrt{108}-3\sqrt{48}}{33\sqrt{3}}$

d) $\frac{3\sqrt[3]{81}-3\sqrt[3]{24}+2\sqrt[3]{375}}{13\sqrt[3]{192}}$ e) $\frac{\sqrt{50}+\sqrt{18}}{7\sqrt{8}-\sqrt{128}}$ f) $\frac{5\sqrt[3]{81}-2\sqrt[3]{24}}{2\sqrt[3]{48}+3\sqrt[3]{162}}$

11.5 Rationalisation

Let's take a surd $\sqrt{3}$.

$\sqrt{3}$ is an irrational number. When it is multiplied by $\sqrt{3}$, the product is 3 and it is a rational number. The process of changing a surd into a rational number is called **rationalisation**. Look at the following examples.

$\sqrt{2} \times \sqrt{2} = (\sqrt{2})^2 = 2 \rightarrow \sqrt{2}$ is the rationalising factor of $\sqrt{2}$.

$2\sqrt{3} \times \sqrt{3} = 2(\sqrt{3})^2 = 6 \rightarrow \sqrt{3}$ is the rationalising factor of $2\sqrt{3}$.

$(\sqrt{x+a})(\sqrt{x+a}) = (\sqrt{x+a})^2 = x + a \rightarrow \sqrt{x+a}$ is the rationalising factor of $\sqrt{x+}$

Thus, if the product of two surds is a rational number, each of them is called rationalising factor of the other.

11.6 Conjugate

Let's take a binomial surd, $\sqrt{5} + \sqrt{3}$.

The rationalising factor of $\sqrt{5} + \sqrt{3}$ is $\sqrt{5} - \sqrt{3}$.

Here, $\sqrt{5} - \sqrt{3}$ is called the conjugate of $\sqrt{5} + \sqrt{3}$ or vice versa.

Thus, a binomial surd can be rationalised multiplying by its conjugate.

Worked-out examples

Example 1: Rationalise the denominators of (i) $\frac{2}{\sqrt{3}}$ ***(ii)*** $\frac{3\sqrt{6}}{2\sqrt{5}}$

Solution:

(i) Multiplying the numerator and denominator by $\sqrt{3}$.

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

(ii) Multiplying the numerator and denominator by $\sqrt{5}$.

$$\frac{3\sqrt{6}}{2\sqrt{5}} = \frac{3\sqrt{6}}{2\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{30}}{2 \times 5} = \frac{3\sqrt{30}}{10}$$

Example 2: Rationalise the denominator and simplify $\frac{3\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$.

Solution:

Multiplying the numerator and denominator by $\sqrt{5} + \sqrt{3}$.

Subject- Computer

1) **Answer the following questions.**
   a. What is network operating system? Give any two examples.
   b. Write any two differences between client-server network and peer-to-peer network model.
   c. What network topology? Write any two advantages and disadvantages of star topology.
   d. What is Internet? List any four services of Internet.
   e. What is Email? Write any two advantages and two disadvantages of Email.
2) **Write a program to input the radius of a circle and print its area and perimeter using SUB procedure.**

   [Hint: a =22/7*r^2, p=2*22/7*r]

3) **Write a program to input a multi-digits number and print its sum using FUNCTION ……. END FUNCTION. [If input number is 275, the program should display sum of digits 14]**

Subject- HPE

Homework will be given in Google classroom.

.विषय – नेपाली

१) पाठ १० - "स्थानीयकरण भन्दा वश्वव्यापीकरण बेस ,वाद ववादपाठको शब्दार्थ पढ्नुहोस्।

२) यसै पाठको पृष्ठ ९६को पढाइबाट प्रश्न नं ९,१०,र ११ को अभ्यास गर्नुहोस्

The End.