

Class: Ten

Subject- Mathematics

Source: Photo of exercise are given below.

Work: complete all general section of 10.1

Do your work neatly

Indices

$$= \frac{x^{n+1}}{x^{n+1} + x^{n+1} + x^n} + \frac{x^n}{x^{n+1} + x^n + 1} + \frac{1}{x^{n+1} + x^n + 1}$$

$$= \frac{x^{n+1}}{x^{n+1} + x^n + x^n} + \frac{x^n}{x^{n+1} + x^n + 1} + \frac{1}{x^{n+1} + x^n + 1}$$

$$= \frac{x^{n+1}}{x^{n+1} + x^n + 1} + \frac{x^n}{x^{n+1} + x^n + 1} + \frac{1}{x^{n+1} + x^n + 1} = \frac{x^{n+1} + x^n + 1}{x^{n+1} + x^n + 1} = 1 \quad \text{Proved.}$$

Example 12: If $x^2 + 2 = 3^{\frac{2}{3}} + 3^{\frac{1}{3}}$, show that $3x(x^2 + 3) = 8$.

Solution:

Here, $x^2 + 2 = 3^{\frac{2}{3}} + 3^{\frac{1}{3}}$

or, $x^2 = (3^{\frac{2}{3}})^2 + (3^{\frac{1}{3}})^2 - 2$

or, $x^2 = (3^{\frac{4}{3}}) + (3^{\frac{2}{3}}) - 2 \cdot 3^{\frac{2}{3}} \cdot 3^{\frac{1}{3}}$

or, $x^2 = (3^{\frac{4}{3}} - 3^{\frac{2}{3}})^2$

or, $x = 3^{\frac{4}{3}} - 3^{\frac{2}{3}}$

or, $x^3 = (3^{\frac{4}{3}} - 3^{\frac{2}{3}})^3$

or, $x^3 = (3^{\frac{4}{3}})^3 - (3^{\frac{2}{3}})^3 - 3 \cdot 3^{\frac{4}{3}} \cdot 3^{\frac{2}{3}} (3^{\frac{4}{3}} - 3^{\frac{2}{3}})$

or, $x^3 = 3 - \frac{1}{3} - 3x$

or, $x^3 + 3x = \frac{8}{3}$

or, $3x^3 + 9x = 8$

or, $3x(x^2 + 3) = 8 \quad \text{Proved.}$

EXERCISE 10.1

General section

1. Evaluate.

a) $\left(\frac{8}{27}\right)^{-\frac{1}{3}} + \left(\frac{4}{9}\right)^{-\frac{1}{2}}$

b) $\left[\left(\frac{125}{64}\right)^{\frac{1}{3}}\right]^2 + \left(\frac{25}{4}\right)^{-\frac{1}{2}}$

c) $\left(\frac{8}{27}\right)^{-\frac{1}{3}} \times \left(\frac{81}{16}\right)^{-\frac{1}{4}} + \left(\frac{32}{243}\right)^{-\frac{1}{5}}$

d) $\sqrt{\sqrt[3]{\frac{729}{64}}}$

e) $\left[\left(\frac{125}{64}\right)^{-\frac{1}{3}}\right]^2$

Vedanta Excel in Mathematics

2. Simplify.

a) $\frac{2^x \times 3 - 2^x}{2^{x+2} - 2^{x+1}}$

b) $\frac{5^{n+2} - 5^n}{5^{n+1} + 5^n}$

c) $\frac{4^n + 4^{n+1}}{4^{n+2} - 4^n}$

d) $\frac{6^{x+2} - 6^x}{6^{x+1} + 6^x}$

e) $\frac{2^{x+4} - 2^x}{5 \cdot 2^x}$

f) $\frac{3^{x+2} - 2 \cdot 5^x}{21 \cdot 5^x}$

g) $\frac{5^{x+2} - 10 \times 5^x}{3 \times 5^x}$

h) $\frac{3^{2x+2} - 3^{2x-1}}{6 \times 27^x}$

i) $\frac{13^{2x+1} + 5 \times 169^x}{9 \times 169^x}$

j) $\frac{11^{2x+1} - 6 \times 121^x}{5 \times 121^x}$

k) $\frac{7^{x+1} + 9 \times 7^x}{7^{x+2} - 45 \times 7^x}$

l) $\frac{9^{x+2} + 10 \times 9^x}{9^{x+1} \times 11 - 8 \times 9^x}$

m) $\frac{11^{x+2} - 55 \cdot 11^{x-1}}{11^x \times 116}$

n) $\frac{27^{2x-1} (243)^{\frac{2x}{3}}}{9^{x+1} \cdot 3^{2x-1}}$

o) $\frac{(243)^{\frac{2x}{3}} \cdot 3^{2x-1}}{9^{x+1} \times 3^{2x-2}}$

3. Simplify.

a) $(64x^3 + 27a^3)^{\frac{1}{3}}$

b) $\sqrt[3]{a^3} \times \sqrt[3]{a^{x-1}}$

c) $(125a^3 + 27b^3)^{\frac{1}{3}}$

d) $(81a^4 + 16b^4)^{\frac{1}{4}}$

e) $\sqrt{a^2b^2c^4} + \sqrt{a^4b^2c^2}$

f) $\sqrt[3]{27a^{12}b^9} + \sqrt[3]{16a^{12}b^9}$

g) $\sqrt[3]{9x^2y^2} \times \sqrt[3]{3x^2y^2}$

h) $\sqrt[3]{3x^2y^{11}z^3} \times \sqrt[3]{72x^3yz^4}$

i) $\sqrt[3]{(x+y)^3} \cdot (x+y)^{\frac{2}{3}}$

j) $\sqrt[3]{(a+b)^{-3}} \cdot (a+b)^{\frac{1}{3}}$

4. Simplify.

a) $x^{a-c} \times x^{c-a} \times x^{a-b}$

b) $(a^{x+y})^{x-y} \times (a^{x+z})^{y-z} \times (a^{x-z})^{x+y}$

c) $\frac{x^{a+b} \times x^{a-b} \times x^{c-2a}}{x^{c-a}}$

d) $\left(\frac{y^x}{x^y}\right)^x \cdot \left(\frac{x^y}{y^x}\right)^y \cdot \left(\frac{x^y}{y^x}\right)^x$

e) $\frac{1}{1+x^{a-b}} + \frac{1}{1+x^{b-a}}$

f) $\frac{1}{1-a^{2x}} + \frac{1}{1-a^{x^2}}$

g) $\frac{x^2y^2 + y^2z^2 + z^2x^2}{x+y+z}$

h) $\frac{a^2 + b^2 + c^2}{a^2b^2 + b^2c^2 + c^2a^2}$

Creative section - A

5. Simplify.

a) $\left(\frac{x^a + b}{x^c}\right)^{a-b} \times \left(\frac{x^c + a}{x^b}\right)^{c-a} \times \left(\frac{x^b + c}{x^a}\right)^{b-c}$

b) $\left(\frac{x^a}{x^b}\right)^{a-b} \times \left(\frac{x^b}{x^c}\right)^{b-c} \times \left(\frac{x^c}{x^a}\right)^{c-a}$

c) $\left(\frac{x^l}{x^m}\right)^{l^2 + 2lm + m^2} \times \left(\frac{x^m}{x^n}\right)^{m^2 + 2mn + n^2} \times \left(\frac{x^n}{x^l}\right)^{n^2 + 2nl + l^2}$

d) $(x^a + x^b)^{a^2 + ab + b^2} \times (x^b + x^c)^{b^2 + bc + c^2} \times (x^c + x^a)^{c^2 + ca + a^2}$

Subject- Computer

A)

- 1) Write a program using FUNCTION .. END FUNCTION statement to calculate and display area of a rectangle.
- 2) Write a program using function procedure that displays area of a circle. The program allows a user to input radius in the main module.
- 3) Write a program using function procedure that calculates and displays volume of a box.

B) Write the full form of :

- a) MODEM b) NIC c) FTP d) SMTP
e) TCP/IP f) STP g) ADSL h) VOIP

Subject- HPE

1. Answer questions C (Write short notes), D (Write difference) and E (Long answer questions) of Unit 1, page 14.

.विषय - नेपाली

व्याकरणबाट अभ्यास गर्नुहोस्

अ) शब्दवर्ग

आ) उपसर्ग र प्रत्यय व्युत्पन्न शब्द

इ) समास शब्द

ई) काल र पक्ष

उ) क्रियाको भाव र अर्थ आज्ञार्थक, इच्छार्थक, सम्भावनार्थक

ऊ) करण र अकरण

ऋ) सरल, मिश्र, संयुक्त वाक्य

ए) लिङ्ग, वचन पुरुष, आदर

ऐ) शब्द भण्डार : पर्यायवाची शब्द विपरीतार्थक शब्द अनेकर्थक शब्द श्रुतिसम भिन्नार्थक शब्द

ओ) वाच्य परिवर्तन

औ) शुद्ध शब्द

अं) उखान वा टुक्का

The End.