

Class: Nine

Subject- Mathematics

Source: Photos of exercise are given below with red boarder.

Work:

- Read & write all the examples
- Complete ex.7.1

Do your work neatly

EXERCISE 7.1

General section

- Express $a^m \times a^n$ as a single base.
 - What is the value of $(5a)^6$, $a \neq 0$?
 - Find the value of $a^{m+n} \times a^{p+q}$.
 - What is the value of $(p+q)^6 + 1^{p+q}$?
 - Find the value of: (i) $\frac{1}{1-x^{m+n}} + \frac{1}{1-x^{p+q}}$ (ii) $(1-3^m)^n + (1-3^n)^m$
 - Simplify: (i) $(a+b)^{-1} \cdot (a^{-1} + b^{-1})$ (ii) $\left(\frac{x^{-1}}{x^{-1}} + \frac{x^{-1}}{y^{-1}}\right)^{-1}$
- Evaluate:**
 - $2^3 \times 2^4$
 - $5^{-7} \times 5^9$
 - $11^{-3} \div 11^{-5}$
 - $(25)^{\frac{1}{2}}$
 - $\left(\frac{1}{64}\right)^{\frac{1}{3}}$
 - $\left(\frac{8}{27}\right)^{-\frac{1}{3}}$
 - $(100)^{\frac{1}{2}} \times \sqrt{\frac{1}{100}}$
 - $(32^{-1})^{3^{-1}}$
 - $\left(\frac{8^6}{125}\right)^{-\frac{1}{3}}$
 - $(7^{3+2})^2$
 - $\left(\frac{8}{25}\right)^{m+1} \times \left(\frac{25}{8}\right)^m$
 - $\sqrt[3]{\sqrt{64^{-1}}}$
 - $\left(\sqrt{\sqrt{\frac{729}{64}}}\right)^{-1}$
 - $\sqrt[3]{9 \times \sqrt{9} \times \sqrt{9}}$

Creative section - A

- Find the value of:**
 - $\left(\frac{8}{27}\right)^{-\frac{1}{3}} \div \left(\frac{4}{9}\right)^{-\frac{1}{2}}$
 - $\left(\frac{125}{64}\right)^{-\frac{1}{3}} \div \left(\frac{625}{256}\right)^{-\frac{1}{4}}$
 - $\left(\frac{27}{8}\right)^{\frac{1}{3}} \left[\left(\frac{81}{16}\right)^{\frac{1}{4}} \div \left(\frac{4}{25}\right)^{\frac{1}{5}}\right]$
 - $\left(\frac{25}{16}\right)^{\frac{1}{2}} \left[\left(\frac{125}{64}\right)^{\frac{1}{3}} \div \left(\frac{8}{27}\right)^{\frac{1}{3}}\right]$
- Simplify:**
 - $(8a^3 + 27x^{-3})^{-\frac{1}{3}}$
 - $(125p^3 + 64q^{-3})^{-\frac{1}{3}}$
 - $\frac{14^6 \times 15^3}{35^3 \times 6^3}$
 - $\frac{40^6 \times 49^6}{56^3 \times 35^3}$
- Simplify.**
 - $(x^2)^{3^{-1}} \times (x^2)^{3^{-2}} \times (x^2)^{3^{-3}}$
 - $(a^{2+1})^{2^{-1}} \times (a^{2+1})^{2^{-2}} \times (a^{2+1})^{2^{-3}}$
 - $\frac{x^{2a+3b} \times x^{3a-4b}}{x^{a+2b} \times x^{4a-3b}}$
 - $\frac{1}{1+a^{3-2}} + \frac{1}{1+a^{2-3}}$
- Show that:**
 - $\frac{3^{n+1} + 3^n}{4 \times 3^n} = 1$
 - $\frac{5^{n+2} - 5^n}{24 \times 5^n} = 1$
 - $\frac{7^{2n+1} - 3 \times 49^n}{4 \times 49^n} = 1$
 - $\frac{6^{m+2} - 6^m}{6^{m+1} - 6^m} = 7$
 - $\frac{7^{n+3} + 4 \times 7^n}{7^{n+1} \times 8 - 3 \times 7^n} = 1$
 - $\frac{5^{n+3} - 55 \times 5^{n-1}}{5^{n+1} + 89 \times 5^n} = 1$
- Simplify:**
 - $\frac{3^p - 3^{p-1}}{3^{p+1} + 3^p}$
 - $\frac{5^x - 5^{x-1}}{4 \times 5^{x-1}}$
 - $\frac{5 \times 2^m - 4 \times 2^{m-1}}{3 \times 2^{m+1} - 5 \times 2^m}$
 - $\frac{2^{n+2} \times (2^{n-1})^{n+1}}{2^{4n-1}} + 4^n$
 - $\frac{5^{-n} \times 625^{n-1}}{5^{2n-2} \times (5 \times 2)^{-1}}$
 - $\frac{9^x \times 3^{x-1} - 3^x}{3^{2x+1} \times 3^{x-1} - 3^x}$

Simplify:

a) $\sqrt{25a^3b^2} \times \sqrt[3]{27a^3}$

b) $\sqrt{a^2b^3c^4} \div \sqrt[4]{a^4b^4c^4}$

c) $\sqrt[4]{16x^4y^4} \div \sqrt[3]{8x^3y^3}$

d) $\frac{\sqrt[3]{56p^3q^4}}{\sqrt[4]{7p^3q^7}}$

e) $\sqrt[4]{216m^3n^3} \div \sqrt[3]{6^3m^3n}$

f) $\sqrt[3]{(a+b)^3} \times (a+b)^{\frac{1}{3}}$

g) $\sqrt[3]{(2x-y)^3} \div (2x-y)^{\frac{1}{3}}$

h) $\sqrt{(a+b)^2} \times \sqrt{(a-b)(a^2-b^2)}$

Simplify:

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

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

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

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

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

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

g) $\frac{p + (pq^2)^{\frac{1}{3}} + (p^2q)^{\frac{1}{3}}}{p-q} \times \left(1 - \frac{q^{\frac{1}{3}}}{p^{\frac{1}{3}}}\right)$

h) $(x^{b^2+c})^{\frac{1}{b^2+c}} \times (x^{c^2+a})^{\frac{1}{c^2+a}} \times (x^{a^2+b})^{\frac{1}{a^2+b}}$

i) $\frac{\left(x + \frac{1}{y}\right)^x \times \left(\frac{1}{y} - x\right)^x}{\left(y + \frac{1}{x}\right)^y \times \left(\frac{1}{x} - y\right)^y}$

j) $\frac{\left(a^2 - \frac{1}{b^2}\right)^a \times \left(a - \frac{1}{b}\right)^{a-2}}{\left(b^2 - \frac{1}{a^2}\right)^b \times \left(b + \frac{1}{a}\right)^{b-2}}$

10. Simplify:

a) $\sqrt[xy]{\frac{a^x}{a^y}} \times \sqrt[yz]{\frac{a^y}{a^z}} \times \sqrt[xz]{\frac{a^z}{a^x}}$

b) $\sqrt[xy]{\frac{x^{y-z}}{x^{z-y}}} \times \sqrt[yz]{\frac{x^{z-y}}{x^{y-z}}} \times \sqrt[xz]{\frac{x^{y-z}}{x^{z-y}}}$

c) $\sqrt[xy]{\frac{a^x}{a^y}} \times \sqrt[yz]{\frac{a^y}{a^z}} \times \sqrt[xz]{\frac{a^z}{a^x}}$

d) $\left(\frac{x^b}{x^c}\right)^{\frac{1}{bc}} \times \left(\frac{x^c}{x^a}\right)^{\frac{1}{ca}} \times \left(\frac{x^a}{x^b}\right)^{\frac{1}{ab}}$

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

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

11. a) If $a^3 + b^3 + c^3 = 0$, prove that $(x^{a+b})^{b^2-ab+b^2} \times (x^{b+c})^{c^2-bc+c^2} \times (x^{c+a})^{a^2-ca+a^2} = 1$ b) If $a = x^{q+r}, y^p, b = x^{r+p}, y^q$ and $c = x^{p+q}, y^r$, prove that $a^{q-r} \times b^{r-p} \times c^{p-q} = 1$ c) If $xyz = 1$, prove that: $\frac{1}{1+x+y^{-1}} + \frac{1}{1+y+z^{-1}} + \frac{1}{1+z+x^{-1}} = 1$.d) If $a + b + c = 0$, prove that: $\frac{1}{1+x^a+x^b} + \frac{1}{1+x^b+x^c} + \frac{1}{1+x^c+x^a} = 1$.12. a) If $x = 2^{\frac{1}{3}} + 2^{-\frac{1}{3}}$, prove that: $2x^3 - 6x = 5$.b) If $a = p^{\frac{1}{3}} - p^{-\frac{1}{3}}$, prove that: $a^3 + 3a = p - \frac{1}{p}$.c) If $x - 2 = 3^{\frac{1}{3}} + 3^{\frac{2}{3}}$, show that: $x(x^2 - 6x + 3) = 2$.

Subject- Computer

1) Write uses and syntaxes of the following HTML tags:

- a) <body> b) <marquee> c) <a> d) e)

2) Write the necessary HTML codes to prepare webpage to describe about your school.

Subject-HPE

Homework will be given in Google classroom.

Subject- Science

1. Why wheel and axle is called continuous lever?
2. Usually, long spanners are preferred more than short spanner to unscrew a very tight and rusted nut, why?
3. What is moment? What are the two factors which affect moment?
4. Winding roads are constructed in hilly region, why?

The End.