EXPONENTS
PERIOD 2

SUBJECT : MATHEMATICS
CHAPTER NUMBER: 2
CHAPTER NAME : EXPONENTS

Learning outcome

➢ Students will practice evaluating terms with **exponents**.

➢ Students will simplify express as positive indices

Previous knowledge test:

1. Find the value of x for which $2^x \div 2^{-4} = 4^5$
2. Calculate the missing value of "x" in the following expression: $(11/9)^3 \times (9/11)^6 = (11/9)^{2x-1}$
3. Evaluate $(\sqrt{4})^{-3}$

Laws of Exponents Problems

https://www.youtube.com/watch?v=rco7DMcy-oE(3:24)

https://www.youtube.com/watch?v=Y6wNiYcuCoE

Examples:

$$(x^{a+b})^{a-b} \cdot (x^{b+c})^{b-c} \cdot (x^{c+a})^{c-a}$$

$$= x^{(a+b)(a-b)} \cdot x^{(b+c)(b-c)} \cdot x^{(c+a)(c-a)}$$

$$= x^{a^2-b^2} \cdot x^{b^2-c^2} \cdot x^{c^2-a^2}$$

$$= x^{a^2-b^2+b^2-c^2+c^2-a^2}$$

$$= x^0$$

$$= 1$$

2)

(i) $\sqrt[5]{x^{20}y^{-10}z^5} \div \dfrac{x^3}{y^3}$

$= (x^{20}y^{-10}z^5)^{1/5} \div \dfrac{x^3}{y^3}$

$= x^{20\times\frac{1}{5}} \cdot y^{-10\times\frac{1}{5}} \cdot z^{5\times\frac{1}{5}} \div \dfrac{x^3}{y^3}$

$= x^4 \cdot y^{-2} \cdot z^{1} \times \dfrac{y^3}{x^3}$

$= x^{4-3} \cdot y^{-2+3} \cdot z^{1}$

$= xyz$

Exercise-2(B)

8)

L.H.S.

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

$$= (x^{a+b})^{a-b}, (x^{b+c})^{b-c} \cdot (x^{c+a})^{c-a}$$

$$= x^{(a+b)(a-b)} \cdot x^{(b+c)(b-c)} \cdot x^{(c+a)(c-a)}$$

$$= x^{a^2-b^2} \cdot x^{b^2-c^2} \cdot x^{c^2-a^2}$$

$$= x^{a^2-b^2+b^2-c^2+c^2-a^2}$$

$$= x^0$$

$$= 1 = \textbf{R.H.S.}$$

9)

$$\frac{x^{5+n} \times (x^2)^{3n+1}}{x^{7n-2}}$$

$$= \frac{x^{5+n} \times x^{2(3n+1)}}{x^{7n-2}}$$

$$= \frac{x^{5+n} \times x^{6n+2}}{x^{7n-2}}$$

$$= x^{5+n+6n+2-7n+2}$$

$$= x^9$$

Exercise-2(B)

11)

L.H.S. $(m + n)^{-1} (m^{-1} + n^{-1})$

$$= \frac{1}{m+n}\left(\frac{1}{m} + \frac{1}{n}\right) = \frac{1}{m+n} \cdot \frac{n+m}{mn} = \frac{1}{mn}$$

$$= (mn)^{-1}$$

$$= \text{R.H.S.}$$

Hence proved.

Home assignment

Exercise 2(B) - 1 to 5

1. 5 books and 5 paper sheets are placed in a stack. Find the total thickness of the stack if each book has a thickness of 20 mm and each sheet has a thickness of 0.016 mm.

2. . Express 0.00000000837 in standard form.

3. . Solve the following: $(81)^{-4} \div (729)^{2-x} = 9^{4x}$

THANKING YOU
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