

Work sheet, Exponent, logarithm (Tipu sir)

Class ten

1) $A = 4^{2p+1}$, $B = \frac{5^{m+1}}{(5^m)^{m-1}}$, $C = \frac{25^{m+1}}{(5^{m-1})^{m+1}}$, $D = 3^x + 3^{1-x}$

a) If $A=128$, find the value of P

b) Prove that $(B \div C) = \frac{1}{25}$

c) Find the value of X when $D= 4$

2) $\log 3 + \log 9 + \log 27 + \dots$

a) What kind of series it is?

b) Find the 5th and 10th term of the series.

c) Determine the sum of first 12 terms

3) L, M, N are algebraic expression, where $L = \frac{x^a}{x^b}$, $M = \frac{x^b}{x^c}$, $N = \frac{x^c}{x^a}$

a) If $L = 1$, then show that $a=b$

b) Prove that ${}^{ab}\sqrt{L} \times {}^{bc}\sqrt{M} \times {}^{ca}\sqrt{N} = 1$

c) Show that, $\log_k L^{a+b} + \log_k M^{b+c} + \log_k N^{c+a} = 0$

4) $X = (a^{-1} + b^{-1})^{-1}$ and $Y = \frac{2^{n+1} \cdot 3^{2n-m} \cdot 5^{m+n} \cdot 6^m}{6^n \cdot 10^{m+2} \cdot 15^n}$

a) Now simplify X

b) Find the value of Y

c) Show that, $\left(\frac{x^q}{x^r}\right)^{q+r-p} \times \left(\frac{x^r}{x^p}\right)^{r+p-q} \times \left(\frac{x^p}{x^q}\right)^{p+q-r} = 1$