

26.11.17

4712321476

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

1.  $A = 128$   $\therefore 4^{2p+1} = 128$

2.  $B = 25$   $\therefore \frac{5^{m+1}}{(5^m)^{m-1}} = 25$

3.  $D = 4$   $\therefore 5^2 + 3^{m-2} = 4$

माना है,

1.  $A = 128$   $\therefore 4^{2p+1} = 128$

$\therefore 128 = 4^{2p+1}$

$\therefore 2^7 = 2^{2(2p+1)}$

$\therefore 7 = 4p + 2$

$\therefore 4p + 2 = 7$

$\therefore 4p = 7 - 2$

$\therefore 4p = 5$

$\therefore p = \frac{5}{4}$  Am.

2.  $B = 25$   $\therefore \frac{5^{m+1}}{(5^m)^{m-1}} = 25$   $\therefore C = \frac{(25)^{m+1}}{(5^{m-1})^{m+1}}$

L.H.S =  $B \div C$

$= \frac{5^{m+1}}{(5^m)^{m-1}} \div \frac{(25)^{m+1}}{(5^{m-1})^{m+1}}$

$= \frac{5^{m+1}}{5^{m^2-m}} \div \frac{(5^2)^{m+1}}{5^{m^2-1}}$

$= 5^{m+1-m^2+m} \div \frac{5^{2m+2}}{5^{m^2-1}}$

$= 5^{2m+1-m^2} \div 5^{2m+2-m^2+1}$

P.T.O

$$= \frac{3^{2x+1} - 3^{2x} - 2 \cdot 3 - 2 + 3^{2x} - 1}{5}$$

$$= 5^{-2} = \frac{1}{25} = \text{R.H.S proved.}$$

9) [2024 W/O]

$$A = 3^x + 3^{1-x}$$

$$\therefore 4 = 3^x + \frac{3}{3^x}$$

$$\therefore 4 = \frac{3^{2x} + 3}{3^x}$$

$$\therefore 4 \cdot 3^x = 3^{2x} + 3$$

$$\therefore 3^{2x} - 4 \cdot 3^x + 3 = 0$$

$$\text{Let } 3^x = a$$

$$\therefore a^2 - 4a + 3 = 0$$

$$\therefore a^2 - 3a - a + 3 = 0$$

$$\therefore a(a-3) - 1(a-3) = 0$$

$$\therefore (a-3)(a-1) = 0$$

$$\therefore a-3=0 \quad \text{or} \quad a-1=0$$

$$a=3 \quad \text{or} \quad a=1$$

$$3^x = 3^1 \quad \text{or} \quad 3^x = 3^0$$

$$\therefore x=1 \quad \text{or} \quad x=0 \quad \text{Ans.}$$

2x-2m      4712321476

2y.  $A = 4^{2m+1}$ ,  $B = \frac{5^{m+1}}{(5^m)^{m-1}}$ ,  $C = \frac{(5^5)^{m+1}}{(5^m)^{m-1}} \cdot B \cdot 3^2 \cdot 3^m$

3.  $A = 128 \cdot 2^{2m}$ ,  $P = 2^m \cdot 4^m \cdot 16^{m-1} \cdot 8^m$ ,  
 4.  $2^{2m+1} \cdot 2^{2m} \cdot 8^{m-1} \cdot 8^m = 2^m$   
 5.  $D = 4 \cdot 2^{2m} \cdot 8^{m-1} \cdot 16^{m-1} \cdot 8^m$

माना है,  
 1.  $128 = 2^{7+2m}$   
 $\therefore 128 = 2^{2m+7}$   
 $\therefore 2^7 = 2^{2m+7}$   
 $\therefore 7 = 2m+7$   
 $\therefore 4m = 7-7 = 0$   
 $\therefore 4m = 0$   
 $\therefore m = 0$  Am.

2.  $160m$  का  $A = \frac{5^{m+1}}{(5^m)^{m-1}}$  का  $C = \frac{(5^5)^{m+1}}{(5^m)^{m-1}}$

$L, M, N = A \cdot B \cdot C$   
 $= \frac{5^{m+1}}{(5^m)^{m-1}} \cdot \frac{(5^5)^{m+1}}{(5^m)^{m-1}}$   
 $= \frac{5^{m+1}}{5^{m-m}} \cdot \frac{(5^5)^{m+1}}{5^{m-m}}$   
 $= 5^{m+1-m} \cdot \frac{5^{2m+2}}{5^{m-m}}$   
 $= 5^{2m+1-m} \cdot 5^{2m+2-m+1}$

$= 5^{2m+1-m} \cdot 24 \cdot 2 \cdot 2^{m-1}$   
 $= 5^{-2} = \frac{1}{25} = A, M, N$  प्रमाण.

9.  $2^{2m+1} = 3^{2m+1}$   
 $\therefore 4 = 3^2 + \frac{3}{3^2}$   
 $\therefore 4 = \frac{3^2 + 3}{3^2}$   
 $\therefore 4 \cdot 3^2 = 3^2 + 3$   
 $\therefore 3^2 \cdot 4 - 3^2 - 3 = 0$   
 $\therefore 3^2 \cdot 3 - 3^2 - 3 = 0$   
 $\therefore 3^3 - 3^2 - 3 = 0$   
 $\therefore 3(3^2 - 3 - 1) = 0$   
 $\therefore (3-3)(3+1) = 0$   
 $\therefore 3-3 = 0$  अतः  $3-1 = 0$   
 $3 = 1$        $3 = 1$   
 $3^2 = 3^1$        $3^2 = 3^0$   
 $\therefore 3 = 1$  अतः  $x = 0$  Am.

माना है

$L = \frac{x^a}{x^b}$ ,  $M = \frac{x^b}{x^c}$ ,  $N = \frac{x^c}{x^a}$

1.  $L = 1$  अतः माना है  $a = b$   
 2.  $M = 1$  अतः माना है  $b = c$   
 3.  $N = 1$  अतः माना है  $c = a$

$\therefore L^a \cdot M^b \cdot N^c = 1$   
 $\log L^a + \log M^b + \log N^c = 0$   
 $a \log L + b \log M + c \log N = 0$

प्रमाण-पत्र

\*  $L = \frac{x^a}{x^b}$ ,  $M = \frac{x^b}{x^c}$ ,  $N = \frac{x^c}{x^a}$

1.  $L = 1$  का मान ज्ञात करें,  $a = b$

2.  $\sqrt{L} \times \sqrt[3]{M} \times \sqrt[4]{N} = 1$

3. प्रमाण-पत्र लिखें

$$\log_x L^{a+b} + \log_x M^{b+c} + \log_x N^{c+a} = 0$$