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Rules of Index

1) $a^m \times a^n = a^{(m+n)}$ (When same bases are multiplied then their power will be added)

Example $5^7 \times 5^3 = 5^{10}$

2) $a^m \div a^n = a^{(m-n)}$ (If terms having same base are in the form of division then their power will be take away)

Example $7^6 \div 7^2 = 7^4$

3) $(a^m)^n = a^{m \times n}$ (If there is power to the power then power will be times.)

Example $(2^3)^2 = 2^{3 \times 2} = 2^6$

(4) $a^{-m} = \frac{1}{a^m}$ E.g. (4) $2^{-3} = \frac{1}{2^3} = \frac{1}{8}$

(5) $\left(\frac{a}{b}\right)^{-m} = \left(\frac{b}{a}\right)^m$ (5) $\left(\frac{2}{3}\right)^{-4} = \left(\frac{3}{2}\right)^4 = \frac{81}{16}$

(6) $a^0 = 1$ (6) $2^0 = 1$

Exercise

Q.1 $3^2 \times 3^7 =$ _____

Q.3 $7^9 \div 7^3 =$ _____

Q.5 $2^{-5} =$ _____

Q.7 $5^{-3} =$ _____

Q.9 $(2^3)^2 =$ _____

Q.11 $(5^2)^3 =$ _____

Q.13 $(32)^0 =$ _____

Q.15 $(10^7 \times 10^5) =$ _____

Q. 17 $3^2 \times 3^7 =$ _____

Q.19 $7^9 \div 7^3 =$ _____

Q.2 $5^7 \times 5^8 =$ _____

Q.4 $2^9 \div 2^5 =$ _____

Q.6 $3^{-7} =$ _____

Q.8 $4^{-3} =$ _____

Q.10 $(3^4)^2 =$ _____

Q.12 $(3^3)^3 =$ _____

Q.14 $7^0 =$ _____

Q.16 $10^7 \times 10^5 =$ _____

Q. 18 $5^7 \times 5^8 =$ _____

Q. 20 $2^9 \div 2^5 =$ _____