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Change of base formula

$$\log_b^m = \log_a^m \times \log_b^a = \frac{\log_a^m}{\log_a^b}$$

Solu: $\log_b^m = x$

$= b^x = m$ — (1)

let $\log_a^m = y$

$\Rightarrow a^y = m^a$ — (11)

and let $\log_b^a = z$

$\Rightarrow b^z = a$ — (111)

from (1), (11) and (3)

we get

$$b^x = a^y = (b^z)^y.$$

$$x = yz$$

$$\log_b^m = \log_a^m \times \log$$

$$\log_{a^y}^m = \frac{1}{K} \log_a^m$$

$$\log_{a^{xy}}^m = x$$

$m = (a^x)^z$ — (1)

and $\log_a^m = y$

$m = a^y$ — (11)

$\log_b$ / $\cdot \log_a$ /

From (I) & (II)

$(a^k)^x = a^y$

$k \cdot x = y$

$\therefore x = \frac{1}{k} \cdot y$

$\log_{a^k}^{m} = \frac{1}{k} \cdot \log_a^m$

If $a^x = N$; $a > 0$ & $a \neq 1$

$N > 0$, Also $\log_a^N = x$

$$a^{\log_a^N} = N$$

$$\log_b^a \times \log_a^b = 1$$

Characteristics and mantissa of a logarithmic number.

Characteristics

1) zero 2) positive 3) negative

Eg:-

(1) $\log_{10} 729$

729.00

729 = 3-digit no.

7.29×10^2

Char. = 2

(2) log 72.9

72.9

7.29×10^1

Char = 1

(3) log 7.29

7.29×10^0.

Char = 0

(4) log .729

.729 = 729×10^{-1}

Char = -1

(5) log 0.0729

0.0729 = 7.29×10^{-2}

∴ Char = -2