

Shortcuts and Important Results to Remember

1 For a non-negative number 'a' and $n \geq 2, n \in \mathbb{N}$,
 $\sqrt[n]{a} = a^{1/n}$.

2 The number of positive integers having base a and characteristic n is $a^{n+1} - a^n$.

3 Logarithm of zero and negative real number is not defined.

4 $|\log_b a + \log_a b| \geq 2, \forall a > 0, a \neq 1, b > 0, b \neq 1$.

$$5 \log_2 \log_2 \underbrace{\sqrt{\sqrt{\sqrt{\dots \sqrt{2}}}}}_{n \text{ times}} = -n$$

$$6 a^{\sqrt{\log_a b}} = b^{\sqrt{\log_b a}}$$

7 Logarithms to the base 10 are called common logarithms (Brigg's logarithms).

8 If $x = \log_c b + \log_b c$, $y = \log_a c + \log_c a$,
 $z = \log_a b + \log_b a$, then $x^2 + y^2 + z^2 - 4 = xyz$.