Nishant Jindal

$$\frac{1}{4} = 2^{-2}$$

$\geq \underline{240}$

$$\boxed{N = a^x \quad , a>0, a\neq 1, N>0}$$

$\boxed{160}$

≥ 99.8

Total 90 → 100

270

$\boxed{\geq 99.5}$

33

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Logarithm

Exponential form

$8 = 4^{\frac{3}{2}}$

$8 = 2^3$

$8 < 9 < 16$

$9 = 2^x$

$= 2^{3.\ldots}$

$N > 0$

$$\boxed{N = a^x \quad , N > 0, \; a > 0, \; a \neq 1}$$

$a \rightarrow$ base

$x \rightarrow$ power/exponent

$a^x \qquad a > 0, a \neq 1$

Nishant Jindal

$$8 = (-2)^x$$

$$8 = 1^x \quad \times$$

$$-8 = (-2)^3 \quad \times$$

$$\boxed{-8 = 2^x} \quad \times$$

$$N = (-2)^x$$

$$-8 = (-2)^x$$

Nishant Jindal

$$N = a^x \qquad a>0,\ a\neq 1,\ N>0$$

$$\Rightarrow \log_a N = x \qquad a>0,\ a\neq 1,\ N>0$$

a = base

$$\log_a N = x$$

$$\Rightarrow a^x = N$$

$\log_a N$ is the power / exponent to which the base 'a' must be raised in order to get the number N.

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$$\boxed{\log_a b \text{ is defined if } a>0,\ a\neq 1,\ b>0}$$

$$\log_a b = x$$

$$\Rightarrow a^x = b$$

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$$\boxed{\log_2(16) = 4.}$$

$$\log_4\left(\frac{1}{64}\right) = -3$$

$$\log_2 16 = x$$

$$\Rightarrow \quad 2^x = 16 = 2^4$$

$$\boxed{x = 4}$$

$$\log_4\left(\frac{1}{64}\right) = x$$

$$\Rightarrow \quad 4^x = \frac{1}{64}$$

$$\Rightarrow 4^x = 4^{-3}$$

$$\boxed{x = -3}$$

$$\log_{\sqrt{5}}(125) = 6$$

$$a^b = c$$

$$\Rightarrow \log_a c = b$$

$$\log_{\sqrt{5}} 125 = x$$

$$\Rightarrow (\sqrt{5})^x = 125$$

$$5^{\frac{x}{2}} = 5^3$$

$$\frac{x}{2} = 3 \Rightarrow \boxed{x = 6}$$

$$\log_p q = r$$

$$\Rightarrow p^r = q$$

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$$\log_{\cos 30^\circ}(\sin 60^\circ) = 1$$

$$\log_3\left(\frac{1}{3}\right) = -1$$

$$\log_{\frac{\sqrt{3}}{2}} \frac{\sqrt{3}}{2} = x$$

$$\left(\frac{\sqrt{3}}{2}\right)^x = \frac{\sqrt{3}}{2}$$

$$\Rightarrow x = 1$$

$$\log_3 \frac{1}{3} = x$$

$$3^x = \frac{1}{3} = 3^{-1}$$

$$\boxed{x = -1}$$

Nishant Jindal

$$\log_{\frac{1}{27}} (9\sqrt{3}) = x = -\frac{5}{6}$$

$$\left(\frac{1}{27}\right)^x = 9\sqrt{3}$$

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

$$-3x = \frac{5}{2}$$

$$\boxed{x = -\frac{5}{6}}$$

$$(a^m)^n = a^{mn}$$

$$\log_{3\sqrt{3}} 1 = 0$$

$$\log_{3\sqrt{3}} 1 = x$$

$$\boxed{(3\sqrt{3})^x = 1}$$

$$\boxed{x = 0} \Leftarrow$$

$$a^m a^n = a^{m+n}$$

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Find x for which $\log_{(2x-3)}(x^2+7x+6)$

is defined.

$2x-3>0$, & $2x-3 \neq 1$ & $x^2+7x+6>0$

$\boxed{x>\frac{3}{2}}$ $\boxed{x \neq 2}$ $(x+1)(x+6)>0$

+ − +

−6 −1

$x \in (-\infty,-6) \cup (-1,\infty)$

Ans. $\Rightarrow$ $\boxed{x \in \left(\frac{3}{2},2\right) \cup (2,\infty)}$

Find x for which $\log_{(3-4x)}\left((x-1)^2(x+2)(x-3)\right)$ is defined.

$x < \frac{3}{4}$ $\qquad$ $x \neq \frac{1}{2}$

$3-4x > 0, \quad 3-4x \neq 1,$

$(x-1)^2(x+2)(x-3) > 0$

$+ \quad -2 \quad - \quad 1 \quad - \quad 3 \quad +$

$x \in (-\infty, -2) \cup (3, \infty)$

$\boxed{x \in (-\infty, -2)} \Rightarrow$ Ans.

Nishant Jindal

$$\log_5 \underbrace{\sqrt{5\sqrt{5\sqrt{5\sqrt{5\sqrt{\cdots\infty}}}}}} = \log_5 5 = 1$$

$$N = \sqrt{5\sqrt{5\sqrt{5\sqrt{5\sqrt{\cdots}}}}}$$

$$\Leftarrow \quad N = \sqrt{5N}$$

$$N^2 = 5N$$

$$N = 5$$

$$\log_{10}\left(\cancel{\tan 1^\circ}\,\cancel{\tan 2^\circ}\,\tan 3^\circ \cdots \tan 45^\circ \cdots \cancel{\tan 88^\circ}\,\underbrace{\cancel{\tan 89^\circ}}_{\cot 1^\circ}\right)$$

$$= \log_{10} 1 = 0$$

Nishant Jindal

$$\boxed{\operatorname{antilog}_a b = a^b}$$

HW

$$\boxed{Ex-2\,(1-10)}$$

$$\operatorname{antilog}_3 2 = 3^2 = 9.$$

$$(376.811)^{12.6} \cdot (10.978)^{12.11} \quad (2.856)^{7.983}$$