

$p = 2 - 2\log_a(ab)$ হলে $\frac{2}{p}$ এর মান কত?

A. $\log_b a$

B. $\log_a b$

C. $-\log_a b$

☒ D. $-\log_b a$

MSB '2025

$$\frac{1}{\log_a x} = \log_x a$$

$$p = 2 - 2(\log_a a + \log_a b)$$

$$\Rightarrow p = 2 - 2 - 2\log_a b$$

$$\Rightarrow p = -2\log_a b$$

$$\Rightarrow -\frac{1}{\log_a b} = \frac{2}{p}$$

$$\therefore \frac{2}{p} = -\log_b a$$

$\log_3 x^2 - 4 = 0$ হলে x এর মান নিচের কোনটি?

ক. 2

খ. 6

গ. 8

ঘ. 9

$$\log_{\textcircled{3}} x^2 = 4$$

$$3^4 = x^2$$

$$\Rightarrow (3^2)^2 = x^2$$

$$\textcircled{x=9}$$

$$\log_{\textcircled{a}} x = \underline{b}$$

$$a^b = x$$

$y = \ln \frac{7+2x}{7-x}$ ফাংশনটির রেঞ্জ নিচের কোনটি?

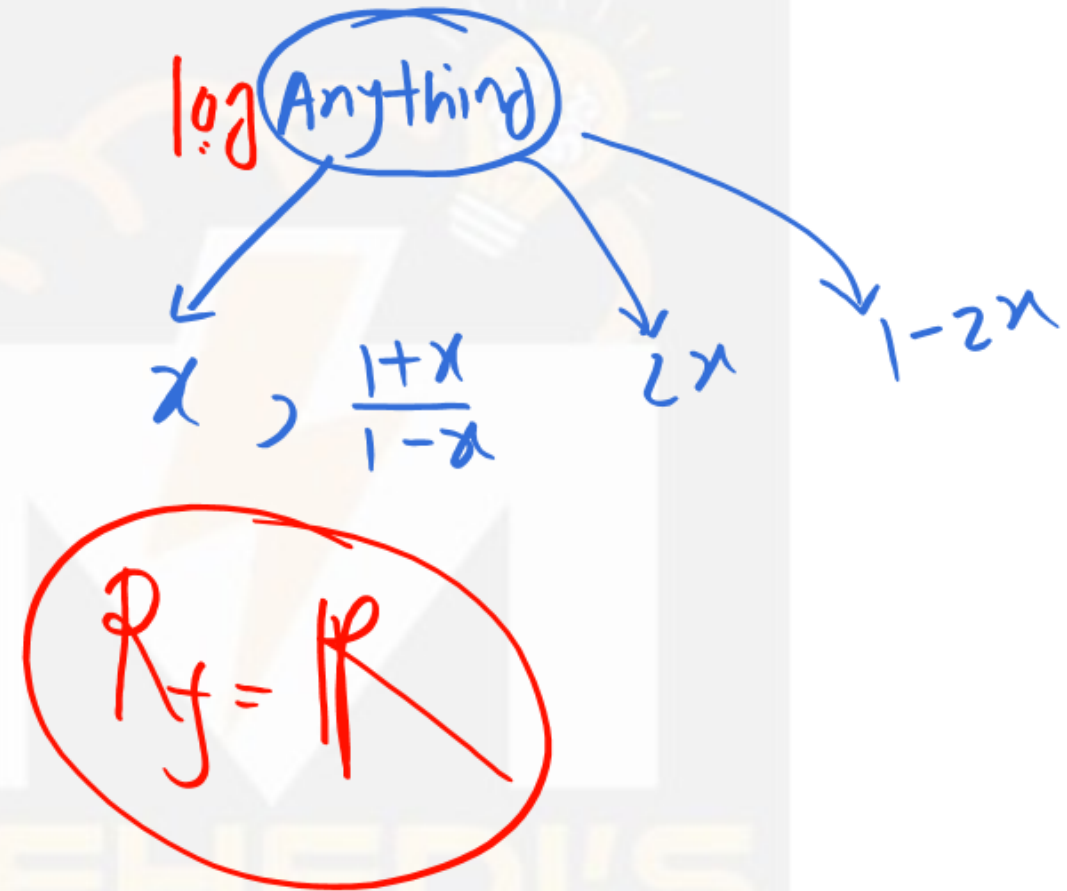
ক. $\mathbb{R} - \{-7\}$

খ. $\mathbb{R} - \{7\}$

গ. $\mathbb{R} - \left(\frac{7}{2}\right)$

ঘ. $\mathbb{R}$

$\ln \rightarrow \log_e$



যদি $\underline{a^{a\sqrt[3]{a}}} = (a\sqrt[3]{a})^a$ হয় তবে a এর মান নিচের কোনটি?

A. $\frac{16}{18}$

B. $\frac{4}{9}$

C. $\frac{16}{9}$

☒ D. $\frac{64}{27}$

$$\begin{aligned} a^{(a)^{\frac{4}{3}}} &= (a^{\frac{4}{3}})^a \\ \Rightarrow \underline{a^{(a)^{\frac{4}{3}}}} &= \underline{a^{\frac{4a}{3}}} \\ a^{\frac{4}{3}} &= \frac{4a}{3} \end{aligned}$$

$$\begin{aligned} \frac{a^{\frac{4}{3}}}{a} &= \frac{4}{3} \\ \Rightarrow a^{\frac{4}{3}-1} &= \frac{4}{3} \\ \Rightarrow a^{\frac{1}{3}} &= \frac{4}{3} \end{aligned}$$

$$\begin{aligned} a^x &= a^y \\ x &= y \end{aligned}$$

$$a = \frac{64}{27}$$

5. $F(x) = \ln x$ হলে

$\mathbb{R} \rightarrow (-\infty, \infty)$

i. ডোমেন $(0, \infty)$

ii. রেঞ্জ $(-\infty, \infty)$

iii. $F^{-1}(x) = e^x$

নিচের কোনটি সঠিক?

A. i ও ii

B. i ও iii

C. ii ও iii

D. i, ii ও iii

JB '2025

$\log_a x \rightarrow \log_e x \rightarrow \ln x$

$x > 0 \rightarrow \mathbb{R}_+$

$\log_a x \rightarrow F^{-1}(x) \rightarrow a^x$

$\ln x \rightarrow \log_e x \rightarrow e^x$

MEHEDI'S MATH ACADEMY

$x^y = y^2 y^{2y} = x^4$ (যেখানে $x \neq 1$) এর সমাধান কত?

ক. $(2, 2)$

খ. $(2, \frac{1}{2})$

গ. $(-2, \frac{1}{2})$

ঘ. $(-2, -2)$

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MEHEDI'S
MATH ACADEMY

$\sqrt{4^x} = \sqrt[4]{8^y}$ হলে $\frac{x}{y}$ এর মান কত?

A. $\frac{2}{3}$

B. $\frac{3}{4}$

C. $\frac{4}{5}$

D. $\frac{3}{2}$

$$\begin{aligned} 4^{\frac{x}{2}} &= 8^{\frac{y}{4}} \\ \Rightarrow 2^{\cancel{2} \times \frac{x}{\cancel{2}}} &= 2^{3 \times \frac{y}{4}} \\ \Rightarrow (2)^x &= (2)^{\frac{3y}{4}} \\ x &= \frac{3y}{4} \\ \frac{x}{y} &= \frac{3}{4} \end{aligned}$$

JB '2025



$\log_4 32 \times \log_{27} 9 =$ কত?

A. $\frac{3}{5}$

B. $\frac{5}{3}$

C. 10

D. $\frac{10}{3}$

$$\begin{aligned} &\rightarrow \log_2^{(5)} 2^{(5)} \times \log_3^{(2)} 3^{(2)} \\ &= \frac{5}{2} \times 1 \times \frac{2}{3} \times 1 \\ &= \frac{5}{3} \end{aligned}$$

ChB '2025

$$\log_a b^n = n \times \log_a b$$

$$\log_a \left(\frac{b}{n} \right) = \frac{n}{n} \log_a b$$

MEHEDI'S
MATH ACADEMY

$25^{3x} = 125^{5y}$ হলে তবে $\frac{x}{y}$ এর মান কত?

ক. $\frac{2}{5}$

খ. $\frac{3}{5}$

গ. $\frac{5}{3}$

ঘ. $\frac{5}{2}$

$$(5^2)^{3x} = (5^3)^{5y}$$

$$\Rightarrow (5)^{6x} = (5)^{15y}$$

$$6x = 15y$$

$$\frac{x}{y} = \frac{15}{6} = \frac{5}{2}$$

DB '2025





i. $a^x = b$, $b^y = c$ এবং $c^z = a$ হলে $xyz =$ কত?

A. -1

B. 0

☒ C. 1

D. 2

JB '2024

ChB '2016

RB '2015

CB '2015

$$\begin{aligned}
 a^x &= b \\
 \Rightarrow a^x &= (c)^{\frac{1}{y}} \\
 \Rightarrow a^x &= (a^{\frac{1}{z}})^{\frac{1}{y}} \\
 \Rightarrow (a)^x &= (a)^{\frac{1}{yz}} \\
 x &= \frac{1}{yz}
 \end{aligned}$$

$$\therefore xyz = 1$$

MEDDI'S
MATH ACADEMY

৭. যদি $(a\sqrt{a})^{4a} = (a^3)^{a\sqrt{a}}$ হয়, তবে a এর মান কত?

A. $\frac{3}{2}$

B. 2

C. $\frac{9}{4}$

D. 4

RB '2024



• $\log_x 4 + \log_x 16 = 6$ হলে $\log_x 8$ এর মান কত?

A. 1

B. 2

☒ C. 3

D. 6

$$\begin{aligned} \log_x 2^2 + \log_x 2^4 &= 6 \\ \Rightarrow 2\log_x 2 + 4\log_x 2 &= 6 \\ \Rightarrow \boxed{\log_x 2 = 1} \end{aligned}$$

$\log_x 8 \rightarrow \log_x 2^3$
 $\Rightarrow 3\log_x 2$
 $\Rightarrow 3 \times 1 = 3$

১). $f(x) = \ln \frac{8+x}{8-x}$ ফাংশনের রেঞ্জ কত?

ক. $(-8, \infty)$

খ. $(8, \infty)$

গ. $(-8, 8)$

ঘ. $\mathbb{R}$

DB '2024



. $F(x) = e^{\frac{x}{2}}$ ফাংশনটির ডোমেন কত?

ক. $(-\infty, 0)$

খ. $[0, \infty)$

গ. $\mathbb{R} - \{2\}$

✓ ঘ. $\mathbb{R}$

MSB '2024

Domain $\rightarrow x$ এর মান

$D \rightarrow$ Domain

$D \rightarrow$ Disturb

$\sqrt{x}$

$\rightarrow \sqrt{2}$

$\frac{2}{0}$

MEHEDI'S
MATH ACADEMY

. $f(x) = \ln(x - 2)$ এর ডোমেন কোনটি?

ক. $R - \{2\}$

খ. $\{x \in \mathbb{R} : x \geq -2\}$

গ. $\{x \in R : x \geq 2\}$

✓ $\{x \in \mathbb{R} : x > 2\}$

DiB '2024

$$x - 2 > 0$$

$$x > 2$$

MEHEDI'S
MATH ACADEMY

. $y = \log_5 x$ এর বিপরীত ফাংশন কোনটি?

ক. $y = \log_x 5$

খ. $y = 5^x$

গ. $y = \log_x \frac{1}{5}$

ঘ. $y = 5^{-x}$

RB '2024



$f(x) = \underline{3^x}$ এর বিপরীত ফাংশন কোনটি?

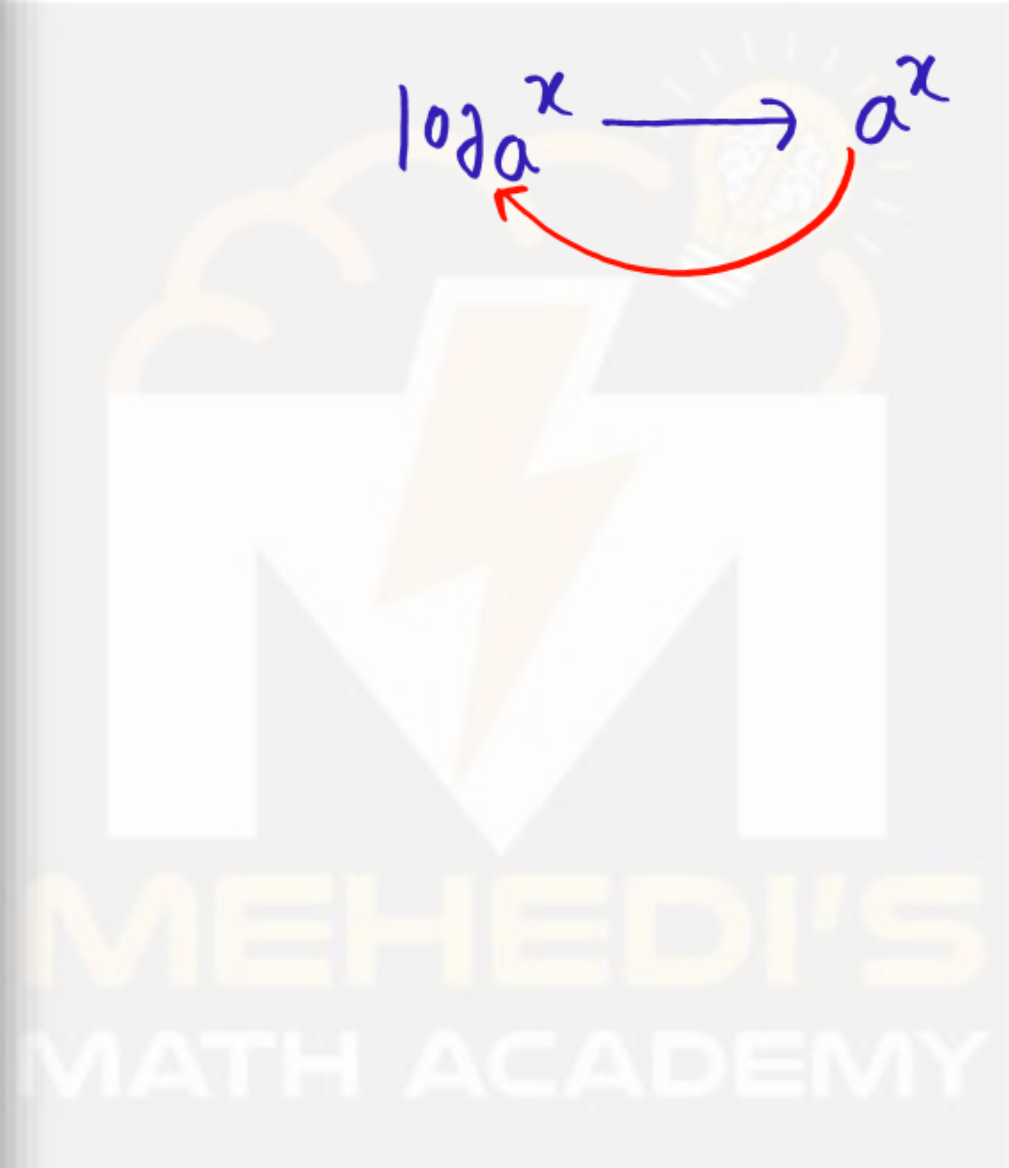
ক. ~~$\log_3 x$~~

খ. $\log_3 y$

গ. $\log_y 3$

ঘ. $\log_x 3$

MB '2024



১. $2^{y+3} + 2^{y+1} = 320$ হলে $y = ?$

A. 0

B. 1

C. 4

☒ D. 5

$$2^y \cdot 2^3 + 2^y \cdot 2^1 = 320$$

$$\Rightarrow 2^y(10) = 320$$

$$\Rightarrow 2^y = \frac{320}{10} = 32 \rightarrow 2^5$$

$$y = 5$$

DB '2023





১. $2^{2x+3} - 2^{x+2} = 112$ হলে, x এর মান কত?

ক. 4

খ. $\frac{7}{2}$

✓ গ. 2

ঘ. $-\frac{7}{2}$

$$\begin{aligned}
 &2^{2x} \cdot 2^3 - 2^x \cdot 2^2 = 112 \\
 \Rightarrow &(2^x)^2 \cdot 8 - 2^x \cdot 4 = 112 \\
 \Rightarrow &8m^2 - 4m - 112 = 0 \\
 \Rightarrow &2m^2 - m - 28 = 0 \\
 \Rightarrow &2m^2 - 8m + 7m - 28 = 0 \\
 \Rightarrow &2m(m-4) + 7(m-4) = 0
 \end{aligned}$$

$$\begin{aligned}
 &m = 4, \quad m = -\frac{7}{2} \\
 &\downarrow \\
 &2^x = 2^2 \\
 &\textcircled{x = 2}
 \end{aligned}$$

১০. $(y^y)^{\sqrt{y}} = (y^{\sqrt{y}})^y$ হলে, $\sqrt{y} =$ কত?

A. 0

B. 1

C. $\frac{1}{2}$

D. $\frac{3}{2}$

$$y^{y\sqrt{y}} = (y^{\frac{3}{2}})^y$$

$$(y^{y\sqrt{y}})^{\frac{1}{y}} = (y^{\frac{3}{2}})^{\frac{y}{y}}$$

$$y\sqrt{y} = \frac{3}{2} \rightarrow \sqrt{y} = \frac{3}{2}$$

$$\begin{aligned} y\sqrt{y} &= \frac{3y}{2} \\ y\sqrt{y} - \frac{3y}{2} &= 0 \\ y(\sqrt{y} - \frac{3}{2}) &= 0 \end{aligned}$$

JB '2023

BB '2022



32. $\sqrt[15]{x^{10}\sqrt{x^8}\sqrt{x^4}}$ এর সরলমান কোনটি?

A. x^{15}

☒ B. x

C. $\sqrt[15]{x}$

D. 1

$$10 + \frac{1}{2}(8 + \frac{1}{2} \times 4)$$

$$= 10 + \frac{1}{2} \times 10 = 15$$

$$\sqrt[15]{x^{15}} = x^1$$



. $\log_{\sqrt{2}} 8$ এর মান কত?

A. 3

B. $4\sqrt{2}$

☒ C. 6

D. $8\sqrt{2}$

$$\rightarrow \log_{2^{\frac{1}{2}}} 2^3$$

$$= \frac{3}{\frac{1}{2}} \times 1$$
$$= 6$$

BB '2023

$$\log_a n^{b^m} = \frac{m}{n} \times \log_a b$$

MEHEDI'S
MATH ACADEMY

. ~~$5^{\log_5 3^2}$~~ এর মান কত?

ক. 2

খ. 3

গ. 5

~~ঘ. 9~~

BB '2023

$$\cancel{a^{\log_a x}} = x$$

$$\cancel{a^{\log_a y}} = y$$

$$\overset{\log_e}{\ln} x = x$$

$$\begin{aligned} a^{\log_a x} &= x \\ \Rightarrow \log_a a^{\log_a x} &= \log_a x \\ \Rightarrow \log_a x \times 1 &= \log_a x \\ \therefore x &= y \end{aligned}$$

MEHEDI'S
MATH ACADEMY

. $\log_2(p + q) = 3$ এবং $\log_2(p - q) = 4$ হলে p এর মান কত?

ক. $\frac{7}{2}$

খ. 7

✓ গ. 12

ঘ. $\frac{25}{2}$

$$p + q = 2^3$$

$$p - q = 2^4$$

$$(+)\quad 2p = 8 + 16$$

$$\therefore p = 12$$

১). $1 + \log_a(bc) = 0$ হলে নিচের কোনটি সঠিক?

ক. $\log_a abc - 1 = 0$

খ. $\log_a abc + 1 = 0$

গ. $a + bc = 0$

ঘ. $abc = 0$

$$\log_a a + \log_a bc = 0$$

$$\Rightarrow \log_a abc = 0$$

$$\Rightarrow a^0 = abc$$

$$abc = 1$$



. $\log_{\sqrt{2}} 3 \times \log_{\sqrt{3}} 5 \times \log_{\sqrt{5}} 2$ এর মান কত?

A. $\sqrt{8}$

B. $\sqrt{30}$

☒ C. 8

D. 30

$$\log_{\sqrt{2}} (\sqrt{3})^2 \times \log_{\sqrt{3}} (\sqrt{5})^2 \times \log_{\sqrt{5}} 2$$

$$\Rightarrow 2 \log_{\sqrt{2}} \sqrt{3} \times 2 \log_{\sqrt{3}} \sqrt{5} \times \log_{\sqrt{5}} 2$$

$$\Rightarrow 4 \times \log_{\sqrt{2}} 2$$

$$= 4 \times \log_{\sqrt{2}} (\sqrt{2})^2$$

$$= 4 \times 2 \times 1 = 8$$

সি-মাথা
হলান

$$\log_a b \times \log_b m = \log_a m$$

$$\log_a m \times \log_m b \times \log_b x = \log_a x$$

. $f(x) = 4^x$ সূচকীয় ফাংশনের ডোমেন কোনটি?

ক. $(-\infty, 4)$

খ. $(-\infty, 0)$

গ. $(0, \infty,)$

ঘ. $(-\infty, \infty,)$

JB '2023

D → Domain

MEHEDI'S
MATH ACADEMY

. $f(x) = \log_e x$ যখন $0 < a < 1$. ডোমেন কত?

ক. $(0, \infty)$

খ. $(-\infty, 0)$

গ. $(\infty, 0)$

ঘ. $(-\infty, \infty,)$



১. $F(x) = |x|$ এর ডোমেন কোনটি?

ক. $\mathbb{R}$

খ. $(0, \infty)$

গ. $(-\infty, 0)$

ঘ. $0, 0$

CB '2022



৭. $8^a = 64^b$ হলে, $a : b$ এর মান নিচের কোনটি?

ক. $1 : 2$

খ. $2 : 1$

গ. $2 : 3$

ঘ. $3 : 2$



4. $4^{\frac{1}{x}} = 64^{\frac{1}{y}}$ হলে, $x : y =$ কোনটি?

A. 1 : 3

B. 1 : 2

C. 2 : 1

D. 3 : 1



২৪. $\sqrt[24]{(x^9) \sqrt{x^6}}$ এর মান নিচের কোনটি?

A. $\sqrt{x}$

B. x

C. $x\sqrt{x}$

D. x^2

$$9 + \frac{1}{2} \times 6$$

$$= 9 + 3$$

$$= 12$$

$$\sqrt[24]{x^{12}} = x^{\frac{12}{24}} = x^{\frac{1}{2}} = \sqrt{x}$$

100. $y = 1 - 5^{-x}$ এর বিপরীত ফাংশন নিচের কোনটি?

ক. $\log_5(1 - x)$

খ. $1 - 5^x$

✓ গ. $\log_5\left(\frac{1}{1-x}\right)$

ঘ. $\log_5(x - 1)$

$$\begin{aligned} &= \log_5(1-x) \\ &= \log_5(1-x)^{-1} \\ &= \log_5 \frac{1}{1-x} \end{aligned}$$

JB '2020

$$y = a^x \longrightarrow \log a^x$$

$$y = \underline{b+a^x} \longrightarrow \log_a(x-b)$$

$$y = \underline{b-a^x} \longrightarrow \log_a(b-x)$$

$$y = b + a^{-x} \longrightarrow -\log_a(x-b)$$

$$y = b + a^{\frac{1}{3}x} \longrightarrow \frac{1}{3} \log_a(x-b)$$

106. $f(x) = \ln \frac{1-x}{1+x}$ এর বিপরীত ফাংশন কোনটি?

ক. $\frac{1+e^y}{e^y}$

খ. $\frac{e^y}{1-e^y}$

গ. $\frac{1+e^y}{1-e^y}$

☒ ঘ. $\frac{1-e^y}{1+e^y}$

$$\frac{1-e^x}{1+e^x}$$

$$f(x) = \frac{1-e^x}{1+e^x}$$

$$f(y) = \frac{1-e^y}{1+e^y}$$

$$\ln \frac{1-x}{1+x} = \frac{1-e^x}{1+e^x}$$

$$\ln \frac{1-x}{1+x} \rightarrow \ln \left(\frac{1-e^x}{1+e^x} \right)$$

126. $-3\sqrt{3}$ এর ঘনমূল কত?

ক. $-\sqrt{3}$

খ. $\sqrt[3]{3}$

গ. $\sqrt{3}$

ঘ. 3

$$\begin{aligned} 3\sqrt{3} &= (\sqrt{3})^3 \\ -3\sqrt{3} &= (-\sqrt{3})^3 \\ \{(-\sqrt{3})^3\}^{\frac{1}{3}} \\ &= -\sqrt{3} \end{aligned}$$

RB '2017



140. $f(x) = 1 - 3^{-x}$ এর বিপরীত ফাংশন কোনটি?

ক. $\log_3(x - 1)$

খ. $\log_3(1 - x)$

✓ গ. $\log_3\left(\frac{1}{1-x}\right)$

ঘ. $\log_3\left(\frac{1}{x-1}\right)$

$$= \log_3 1 - x \\ = \log_3 (1-x)^{-1}$$

DiB '2017





