বাস্তব সংখ্যা (Poll Time)

নিচের সংখ্যা গুলো এর মধ্যে মূলদ সংখ্যা বের কর -

i. 2.5 ✓
ii. 3.1416.... ✗
iii. $\frac{22}{7}$ ✓
iv. 111.1111..... ✓
v. 2020 ✓
vi. 2.058 ✓
vii. e^2 ✗
viii. $infinity$ ✗

Options:

A. i, iii, iv, v, vi, vii
B. i, iii, iv, v, vi, viii
C. i, iii, iv, v, vi
D. i, iii, iv, v, vii, viii

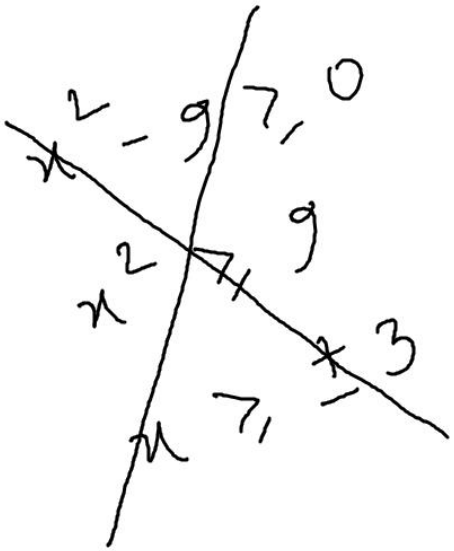
উদ্ভাস
Since 2000

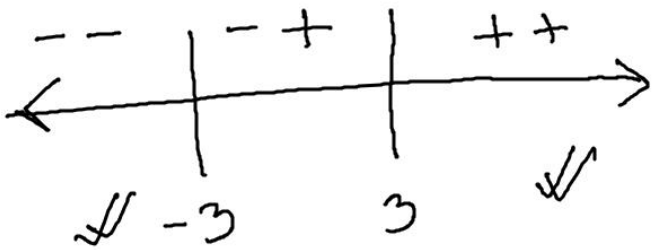
অসমতা

$x^2 - 9 \geq 0$

$(x+3)(x-3) \geq 0$

$x \leq -3$ or $x \geq 3$



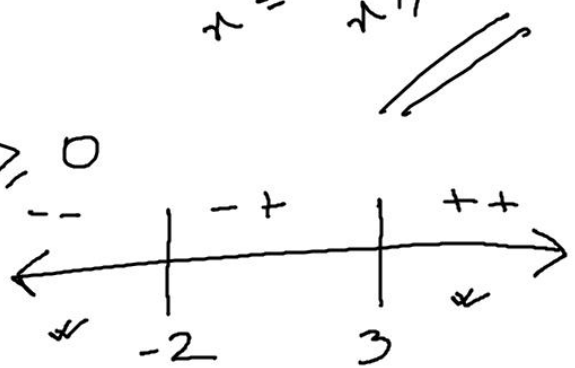


অসমতা

$x^2 - x - 6 \geq 0$

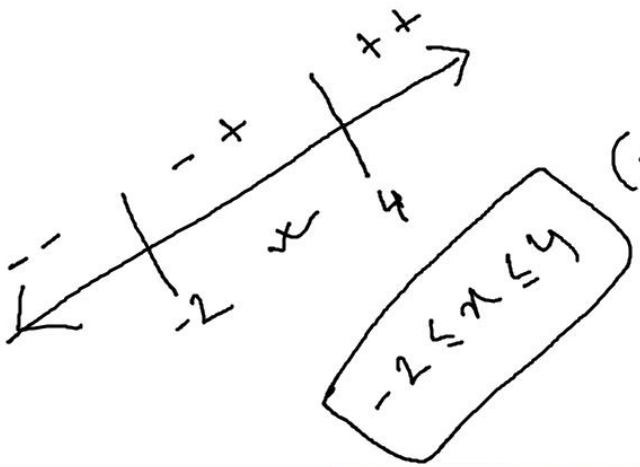
$(x-3)(x+2) \geq 0$

$x \leq -2$ or $x \geq 3$



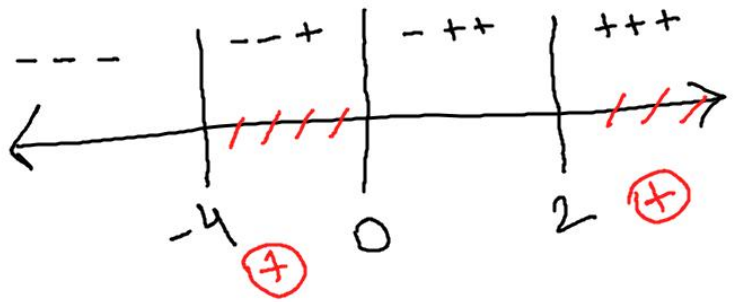
$x^2 - 2x - 8 \leq 0$

$(x-4)(x+2) \leq 0$



অসমতা

$$x\,(x-2)(x+4) \geq 0$$



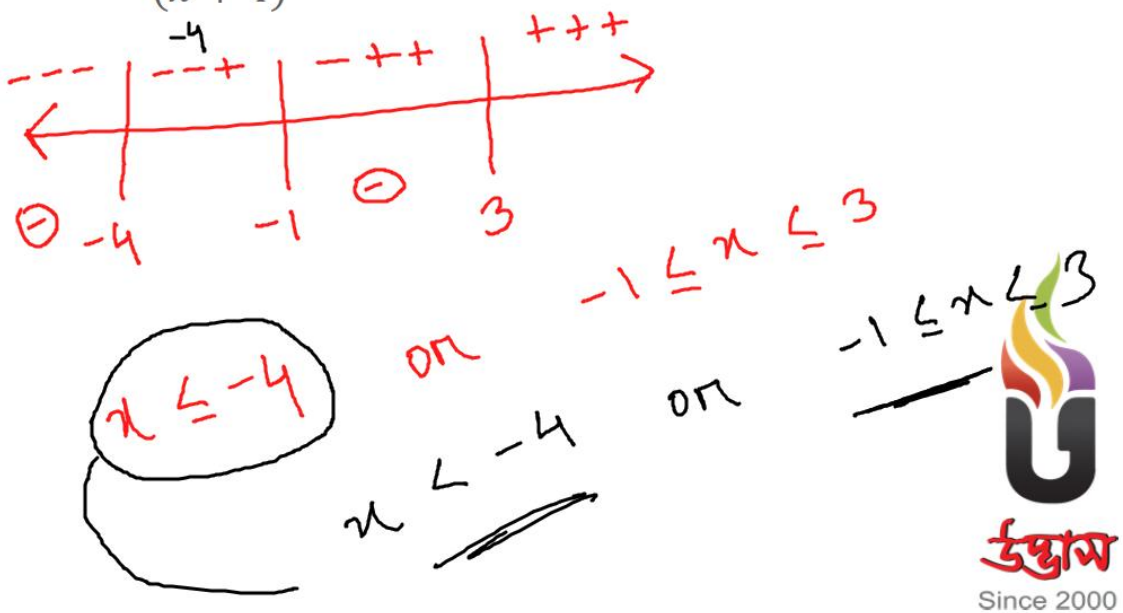
$x \geq 2$ or $-4 \leq x \leq 0$

অসমতা (Poll Time – NDC previous Year)

$$\frac{(x-3)(x+1)}{(x+4)} \leq 0$$

Option:

A. $x \leq -4 \text{ or } -1 \leq x \leq 3$
B. $x < -4 \text{ or } -1 \leq x \leq 3$ ✓
C. $x < -4 \text{ or } -1 < x < 3$
D. $x \leq -4 \text{ or } -1 < x \leq 3$



ফাংশন

$y = f(x)$ মানে কি ?

- $2x + 3y = 10$
- $x^2 + y^2 = 9$
- $x^2 = y$
- $x = y^2$
- $y = 10$

$x = f(y)$

$x = 1$

$2.1 + 3y = 10$

$y = 8/3$

$y = f(x)$

$x = 1$

$1^2 + y^2 = 9$

$y^2 = 8$

$y = \pm\sqrt{8}$

$x = 2$

$y = 4$

$x = 1$

$y^2 = 1$

$y = \pm 1$

$y \neq f(x)$

$x = 5$ $y = 10$ Constant

$x = -2$

$y = 10$

ফাংশন Domain

- Case 1 : $\frac{c}{\square}$
- Case 2 : $\sqrt[c]{\square}$
- Case 3 : Special Function (e.g. sin, cos, log, ln … etc.)

$D_f = \mathbb{R}$

$f(x) = \frac{x^2+10}{\quad}$

$D_f = \mathbb{R}$

$f(x) = \frac{x^{100}+x^{99}+\cdots+1}{\quad}$

$D_f = \mathbb{R}$

$f(x) = \frac{|x+3|}{\quad}$

$D_f = \mathbb{R}$

ফাংশন Domain (Case 1)

- Case 1 : $\frac{c}{\square}$; $\square \neq 0$

Domain নির্ণয় করঃ

- $f(x) = \frac{5x}{3x-2}$
- $f(x) = \frac{x}{x^2-3x-4}$
- $f(x) = \frac{x^2}{x^2+1}$ [NDC Previous year]
- $f(x) = \frac{x^2-1}{x+1}$ [NDC Previous year]

$3x-2 \neq 0$
$x \neq \frac{2}{3}$
$D_f = \mathbb{R} - \{\frac{2}{3}\}$

$x^2-3x-4 \neq 0$
$(x-4)(x+1) \neq 0$
$x \neq 4, -1$
$D_f = \mathbb{R} - \{4, -1\}$

$x^2+1 \neq 0$
$x^2 \neq -1$
$x \neq \sqrt{-1}$
$D_f = \mathbb{R} - \{\}$
$= \mathbb{R}$

উদ্ভাস
Since 2000

ফাংশন Domain (Case 1)

- Case 1 : c ; $\square \neq 0$

Domain নির্ণয় করঃ

- $f(x) = \frac{5x}{3x-2}$
- $f(x) = \frac{x}{x^2-3x-4}$
- $f(x) = \frac{x^2}{x^2+1}$ [NDC Previous year]
- $f(x) = \frac{x^2-1}{x+1}$ [NDC Previous year]

$f(x) = \frac{(x+1)(x-1)}{x+1} = x-1$ $\quad D_f = \mathbb{R}$

$x+1 \neq 0$

$x \neq -1$

$D_f = \mathbb{R} - \{-1\}$

উদ্ভাস
Since 2000

ফাংশন Domain (Case 2)

Domain নির্ণয় করঃ

- $f(x) = \sqrt[3]{2x-5}$
- $f(x) = \sqrt[5]{x^2+x-5}$
- $f(x) = \sqrt{2x-5}$
- $f(x) = \sqrt[4]{x^2-4}$
- $f(x) = \sqrt[4]{6-x-x^2}$

$D_f = \mathbb{R}$

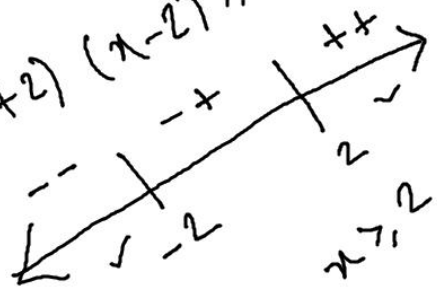
$D_f = \mathbb{R}$

$2x - 5 \geq 0$

$x \geq 5/2$

$x^2 - 4 \geq 0$

$(x+2)(x-2) \geq 0$

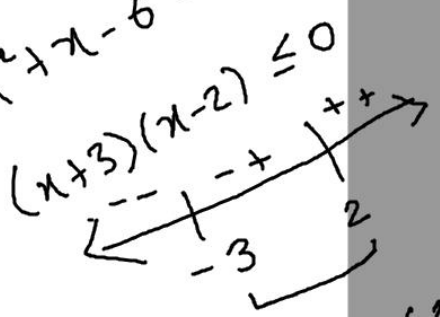


$x \geq 2$ or $x \leq -2$

$6 - x - x^2 \geq 0$

$x^2 + x - 6 \leq 0$

$(x+3)(x-2) \leq 0$



$-3 \leq x \leq 2$

ফাংশন Domain (Case 2) – Complete Overview

Domain নির্ণয় করঃ

- $f(x) = \sqrt[3]{2x+5}$ → $D_f = \mathbb{R}$
- $f(x) = \frac{1}{\sqrt[3]{2x+5}}$ → $2x+5 \neq 0$, $x \neq -5/2$, $D_f = \mathbb{R} - \{-5/2\}$
- $f(x) = \sqrt[4]{2x+5}$ → $2x+5 \geq 0$, $x \geq -5/2$, $[-5/2, \infty[$
- $f(x) = \frac{1}{\sqrt[4]{2x+5}}$ → $2x+5 > 0$, $x > -5/2$

ফাংশন Domain (Case 3)

- $f(x) = \ln(2x - 3)$

$2x-3 > 0$

$x > 3/2$

- $f(x) = \log(16 - x^2)$

$16-x^2 > 0$

$x^2-16 < 0$

$(x+4)(x-4) < 0$

$-4 < x < 4$

Things to Remember

$\ln 3 = 1.09861..$

$\ln 0 = Math\ Error$

$\ln(-3) = Math\ Error$

ফাংশন Domain (Case 3)

- $f(x) = \sin x$

$D_f = \mathbb{R}$

- $f(x) = \tan x$

$\tan 90^\circ \to 1\times 90^\circ$

$\tan 270^\circ \to 3\times 90^\circ$

$\tan 45^\circ \to 5\times 90^\circ$

$\vdots$

$D_f = \mathbb{R} - \{90^\circ \text{ এর বিজোড় গুণিতক}\}$

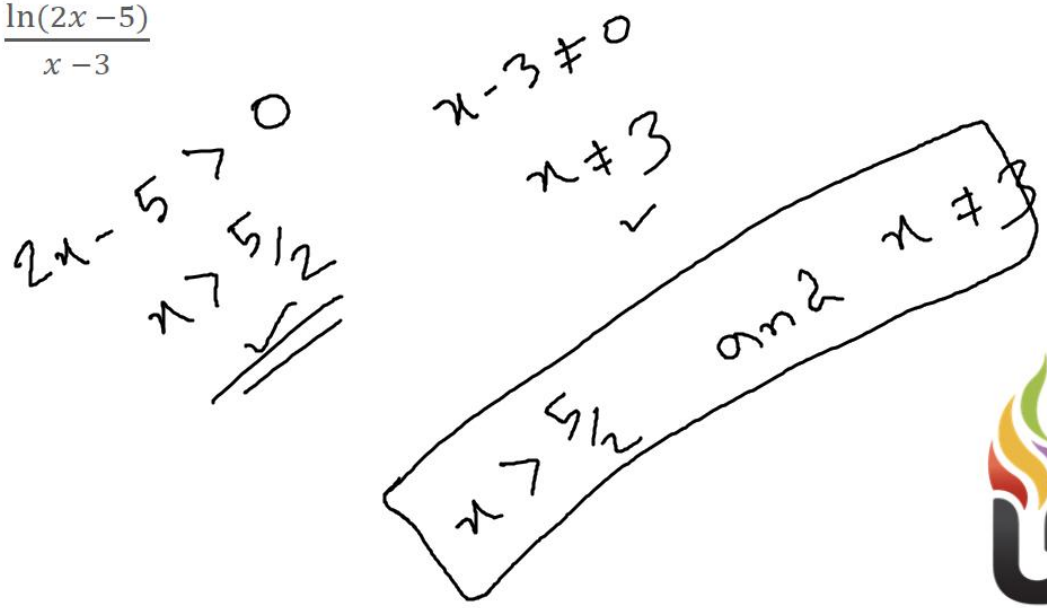
$= \mathbb{R} - \left\{(2n+1)\frac{\pi}{2}\right\}$

ফাংশন Domain (Poll Time – NDC Previous year)

Domain নির্ণয় করঃ $f(x) = \frac{\ln(2x-5)}{x-3}$

Option:

A. $R - \left\{\frac{5}{2}\right\}$
B. $R - \{3\}$
C. $x \geq \frac{5}{2}$ and $x \neq 3$
D. $x > \frac{5}{2}$ and $x \neq 3$



ফাংশন Range

- $f(x) = \frac{2x}{3x-1}$

Range $= \mathbb{R} - \left\{\frac{2}{3}\right\}$

- $f(x) = \frac{5x-4}{2x+3}$

Range $= \mathbb{R} - \left\{\frac{5}{2}\right\}$

$f(x) = \frac{5}{3x+1}$

Range $= \mathbb{R} - \left\{\frac{0}{3}\right\}$

$= \mathbb{R} - \{0\}$

ফাংশন Range

- $f(x) = x^2 + 4$

Range ≥ 4

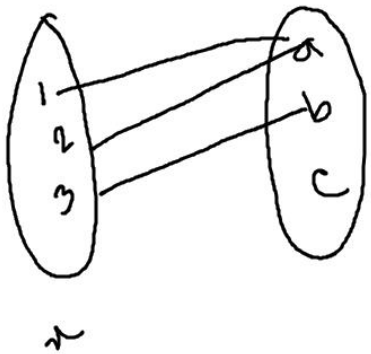
- $f(x) = x^3 - 5$

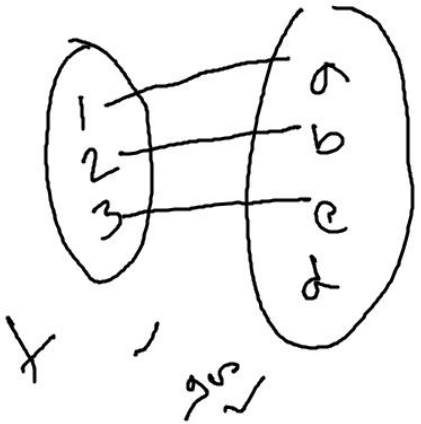
Range $= \mathbb{R}$

$-\infty - 5$

-13

One to One Function (এক-এক ফাংশন)





Inverse Function (বিপরীত ফাংশন)

ধর, ছোট একটি বাচ্চা।

এখন বাচ্চাটিকে গোসল করানোর জন্যে তার প্রথমে

(i) শার্ট খুলতে হবে। then,

(ii) গেন্জি খুলতে হবে।

এখন লক্ষ্য কর,

$f(x) = 3x + 5$, যেখানে x হল ছোট বাচ্চা। যার সাথে প্রথমে 3 গুণ করা হয়েছে তারপর 5 যোগ করা হয়েছে। এখন বিপরীত ফাংশন বের করতে হলে প্রথমে 5 কে বিয়োগ করতে হবে then 3 দ্বারা ভাগ করতে হবে।

অর্থাৎ, $f(x) = 3x + 5$,

$\therefore f^{-1}(x) = \frac{x-5}{3}$

যা করা আছে, $\times 3, +5,$
যা করতে হবে, $-5, \div 3$

Inverse Function (বিপরীত ফাংশন)

- $f(x) = \frac{x^2+5}{3}$

$f^{-1}(x) = \sqrt{3x-5}$

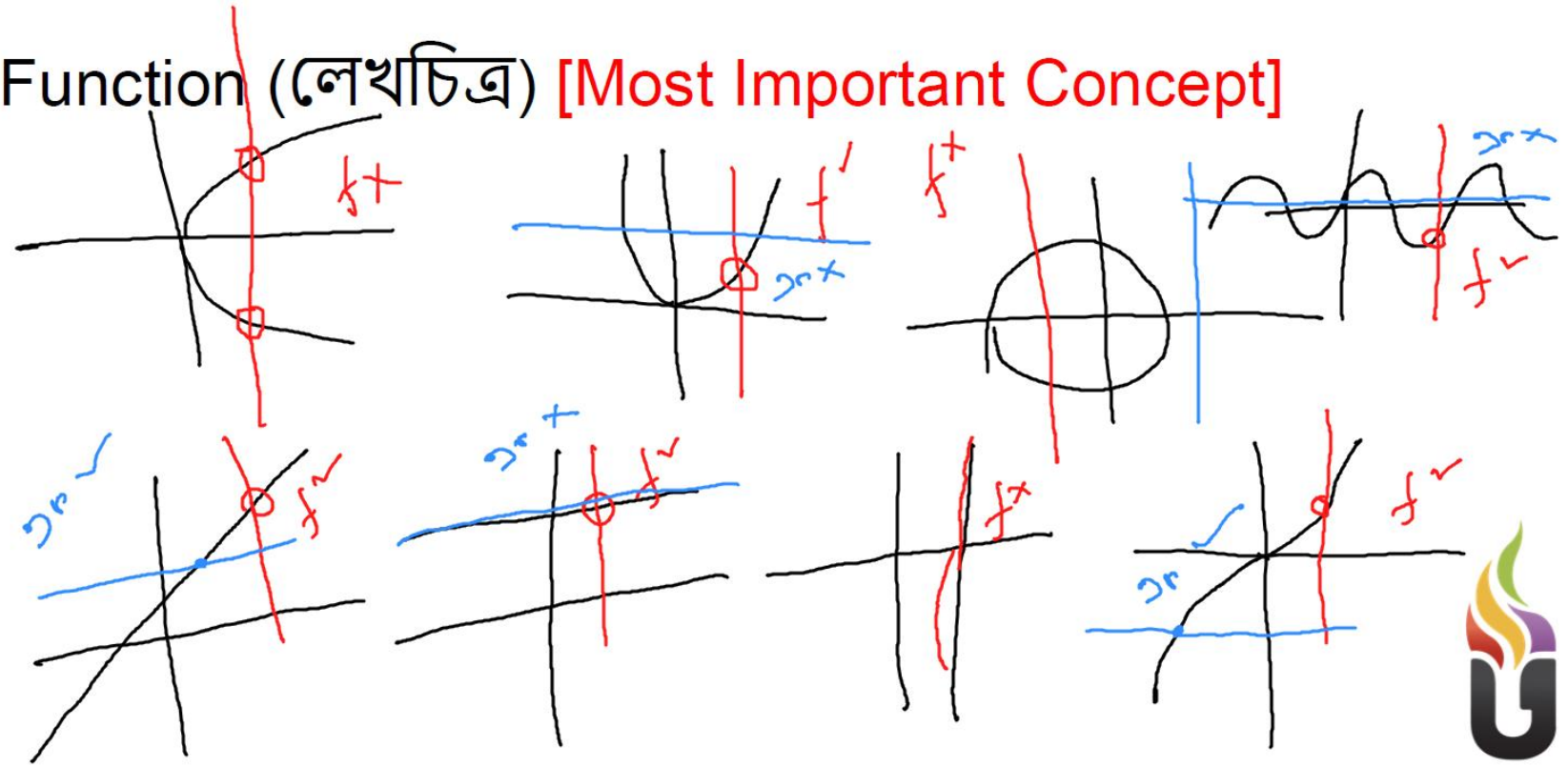
যা করা আছে $()^2, +5, \div 3$
যা করতে হবে,
$\times 3, -5, \sqrt{()}$

- $f(x) = \left(\frac{3x^2+5}{4}\right)^{\frac{1}{3}}$

$f^{-1}(x) = \left(\frac{4x^3-5}{3}\right)^{\frac{1}{2}}$

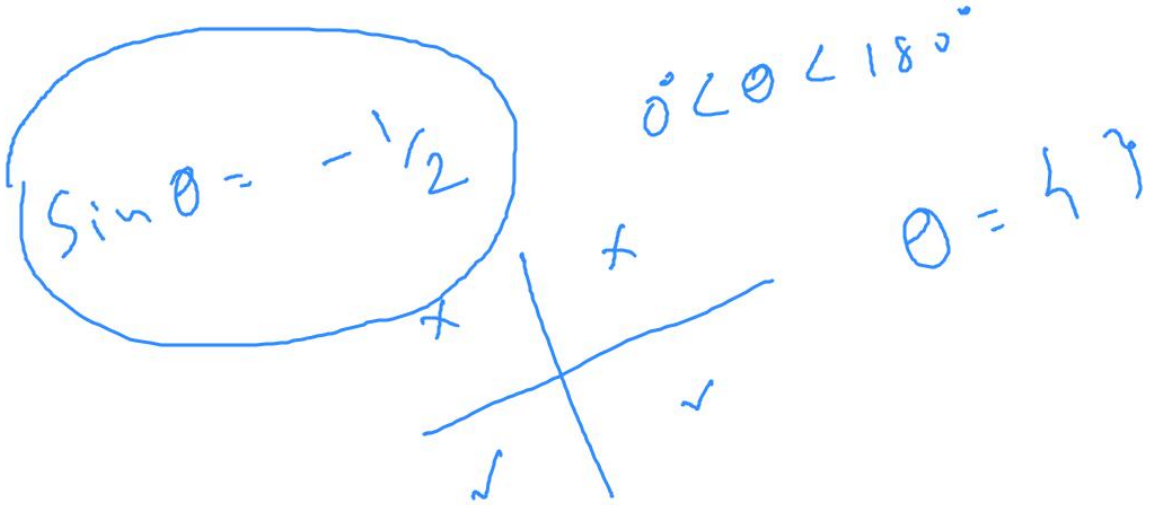
যা করা আছে,
$()^2, \times 3, +5, \div 4, ()^{\frac{1}{3}}$
যা করতে হবে।
$()^3, \times 4, -5, \div 3, ()^{\frac{1}{2}}$

Function (লেখচিত্র) [Most Important Concept]



ত্রিকোণমিতি [NDC Previous years]

$\sin\theta = \frac{1}{2}$; θ এর ৬ টি মাণ লিখো ?



Probability (Poll Time) [NDC Previous year]

3 টি মুদ্রা নিক্ষেপ করা হলে, কমপক্ষে 2 টি হেড আসার সম্ভাবনা কত ?

Option:
A. ½
B. $^3/_8$
C. $^1/_8$
D. $^1/_8$

HHH ✓ THH ✓
HHT ✓ THT
HTH ✓ TTH
HTT TTT

$\frac{4}{8} = \frac{1}{2}$

$^4/_8$

কলেজ ভর্তি প্রস্তুতি - Adobe Acrobat Reader DC

You are screen sharing | Stop Share

File Edit View Window Help

Home Tools কলেজ ভর্তি প্রস্তুতি ×

Mouse Select Text Draw Stamp Spotlight Eraser Format Undo Redo Clear Save

Share

Any question

$$\frac{3.1+2}{1+2} = \frac{5}{3}$$

$$\frac{3x+2}{(x-1)(x+2)}$$

$$= \frac{5/3}{x-1} + \frac{4/3}{x+2}$$

$x-1 \to 1$

$x+2 \to -2$

$$\frac{3.(-2)+2}{-2-1} = \frac{-4}{-3} = 4/3$$

Type here to search

12:58 PM
6/11/2020