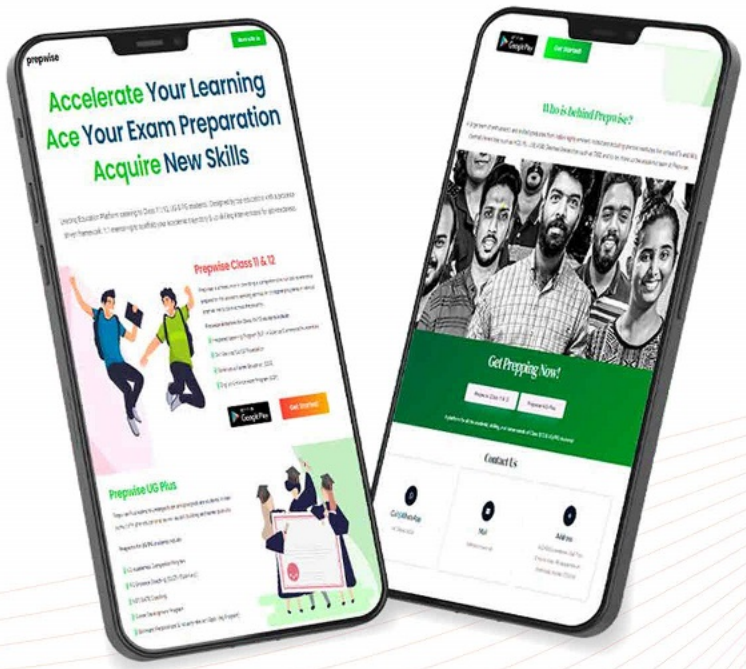
राष्ट्रीय परीक्षा एजेंसी
National Testing Agency
Excellence in Assessment

prepwise



CUET UG

Previous Year Question Paper

2022

Download the Prepwise App Now!

Call or WhatsApp
91+ 7994441041

Join Kerala's No.1
CUET UG Entrance Coaching

GET IT ON Google Play

Download on the App Store

राष्ट्रीय परीक्षा एजेंसी
National Testing Agency
Excellence in Assessment

prepwise

CUET UG

Previous Year Question Paper

2022

Section II
Mathematics

Section Name: Compulsory

Question:

In a sequence of Bernoulli trials with $p = 3/4$, the probability that first success occurs after four failures, is :

A	$\frac{3}{512}$
B	$\frac{3}{1024}$
C	$\frac{1}{2}$
D	$\frac{3}{4}$

Section Name: Compulsory
Question:

If $\begin{bmatrix} x-4 & 2 & -1 \\ -2 & y-2 & 6 \\ 1 & -6 & z+3 \end{bmatrix}$ is skew-symmetric matrix, then the value of $\begin{vmatrix} x & y & z \\ y & z & x \\ z & x & y \end{vmatrix}$ is :

A	144
B	117
C	-117
D	1

Section Name: Compulsory
Question:

If $A = [2\ -1\ 6]_{1\times 3}$ and $B = \begin{bmatrix} 1 \\ 4 \\ 6 \end{bmatrix}_{3\times 1}$, then sum of elements of matrix BA is :

A	11
B	77
C	88
D	101

Section Name: Compulsory

Question:

The function $f(x) = 2x^3 - 3x^2 - 36x + 10$ is strictly increasing in :

A	$(-\infty, -2) \cup (3, \infty)$
B	$(-\infty, -1) \cup (2, \infty)$
C	$(-\infty, 0)$
D	$(0, \infty)$

Section Name: Compulsory
Question:

If $x = at^2$ and $y = 2at$, then the value of $\frac{d^2y}{dx^2}$ at $t = 2$ is :

A	$-\frac{1}{4a}$
B	$-\frac{1}{16}$
C	0
D	$-\frac{1}{16a}$

Section Name: Compulsory
Question:

The function $f(x) = x^3 + \frac{5}{2}x^2 - 2x - 3$, has :

A	two points of local maxima
B	two points of local minima
C	one point of local maxima and one point of local minima
D	no point of local maxima or minima

Section Name: Compulsory
Question:

If $\int(x^2 + \sqrt{x})\,dx = ax^3 + bx^{3/2} + c$ where a, b and c are constants, then the value of $\frac{9}{5}(a^2 + b^2)$ is :

A	$\frac{5}{9}$
B	$\frac{1}{3}$
C	$\frac{2}{3}$
D	1

Section Name: Compulsory

Question:

$$\int_{-4}^{4} \log_e\left(\frac{5+x}{5-x}\right) dx \text{ is equal to :}$$

A	$2 \log_e 5$
B	$3 \log_e 5$
C	$-\frac{16}{9}$
D	0

Section Name: Compulsory
Question:

The area enclosed by two circles $x^2+y^2=a^2$ and $(x-a)^2+y^2=a^2$ is :

A $\left(\frac{4\pi-\sqrt{3}}{6}\right)a^2$

B $\left(\frac{4\pi-3\sqrt{3}}{6}\right)a^2$

C $\frac{\pi-\sqrt{3}}{6}a^2$

D $\frac{2\sqrt{3}-\pi}{6}a^2$

Section Name: Compulsory
Question:

The order and degree of the differential equation $\sqrt{x\frac{dy}{dx}+1}=\frac{d^2y}{dx^2}+\frac{dy}{dx}$ are respectively :

A	1 and 2
B	2 and 1
C	2 and 2
D	1 and 1

Section Name: Compulsory
Question:

The general solution of the differential equation $\frac{dx}{dy} = 2ye^{y^2-x}$ is :

A	$e^y = e^{x^2} + c$
B	$e^x = e^{y^2} + c$
C	$e^{-y} + e^{x^2} = c$
D	$e^{x^2} - y = c$

The differential equation representing the family of curves given by $y = e^{-x}(a + bx)$ is :

A $\frac{d^2y}{dx^2} = e^x\left(\frac{dy}{dx}\right)$

B $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = 0$

C $\frac{d^2y}{dx^2} - \frac{dy}{dx} - y = 0$

D $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + 7x = 0$

Section Name: Compulsory
Question:

If the difference between mean and variance of a binomial distribution B(n, p) is 1 and the difference of their squares is 15, then :

A	$n = 64,\ p = \frac{1}{8}$
B	$n = 64,\ p = \frac{7}{8}$
C	$n = 32,\ p = \frac{1}{8}$
D	$n = 32,\ p = \frac{7}{8}$

Section Name: Compulsory

Question:

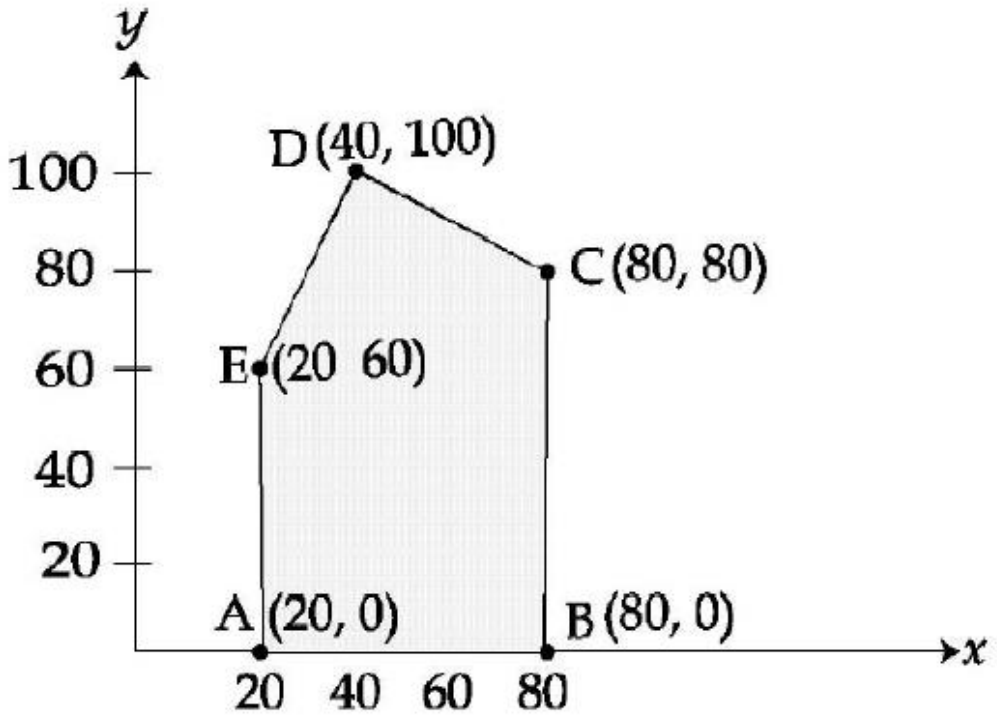
The variance of the first 16 natural numbers is :

A	$\frac{85}{4}$
B	$\frac{56}{3}$
C	24
D	$\frac{133}{4}$

CUET 2022 QUESTION PAPER

Question:

The corner points of the feasible region of an L.P.P. is shown in the Fig maximum and minimum values of the objective function $z = 2x + y$ is



A	180
B	340
C	260
D	280

Section Name: Mathematics Core
Question:

Let $f : \mathbf{R} \to [0, \infty)$ be defined by $f(x) = x^2 + |x - 5|$. Then f is :

A	one-one but not onto.
B	neither one-one nor onto.
C	one-one and onto.
D	onto but not one-one.

Section Name: Mathematics Core
Question:

Let R be a relation on the set $A = \{1, 2, 3, 4, 5, 6\}$ defined as $R = \{(x,y) : x + y$ is divisible by $y, x \leq y\}$. Then R is :

A	reflexive but neither symmetric nor transitive.
B	reflexive and transitive but not symmetric.
C	an equivalences relation.
D	reflexive, symmetric but not transitive.

Section Name: Mathematics Core

Question:

Let $A = \begin{bmatrix} 2 & 3 \\ -1 & 1 \end{bmatrix}$ and $B = \frac{1}{5}\begin{bmatrix} a & b \\ c & d \end{bmatrix}$. If $B = A^{-1}$, then $(d-b)$ is equal to :

A	-1
B	5
C	-5
D	1

Section Name: Mathematics Core
Question:

If the matrix $\begin{bmatrix} x^2 - 3x + 2 & 1 & 3 \\ -1 & 2x^2 - 3x + 1 & -7 \\ -3 & 7 & x^2 - 7x + 6 \end{bmatrix}$ is skew symmetric, then x is equal to :

A	1
B	2
C	6
D	$\frac{1}{2}$

Section Name: Mathematics Core

Question:

The value of $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^7 x dx$ is :

A	0
B	$\frac{5\pi}{16}$
C	π
D	$\frac{32}{5}$

Section Name: Mathematics Core

Question:

$$\int \frac{\cot^4 \sqrt{x}\ \operatorname{cosec}^2 \sqrt{x}}{\sqrt{x}}\, dx \text{ is equal to :}$$

A	$\frac{2}{5}\cot^5 \sqrt{x} + c$
B	$-\cot^5 \sqrt{x} + c$
C	$-\frac{2}{5}\cot^5 \sqrt{x} + c$
D	$-\frac{5}{2}\cot^5 \sqrt{x} + c$

Section Name: Mathematics Core

Question:

$$\int \frac{dx}{x\sqrt{ax-x^2}} \text{ is equal to :}$$

A	$\frac{1}{a}\frac{\sqrt{x}}{\sqrt{a-x}} + C$
B	$-\frac{2}{a}\frac{\sqrt{x}}{\sqrt{a-x}} + C$
C	$-\frac{\sqrt{a-x}}{\sqrt{x}} + C$
D	$-\frac{2}{a}\frac{\sqrt{a-x}}{\sqrt{x}} + C$

Question:

Match **List - I** with **List - II**.

List - I		**List - II**	
(A)	$\int e^x \left(\frac{1}{x} - \frac{1}{x^2}\right) dx =$	(I)	$e^x(x^2 - 2x + 2) + C$
(B)	$\int xe^x \, dx =$	(II)	$-\frac{e^x}{x^2} + C$
(C)	$\int x^2 e^x \, dx =$	(III)	$\frac{e^x}{x} + C$
(D)	$\int e^x \left(-\frac{1}{x^2} + \frac{2}{x^3}\right) dx =$	(IV)	$e^x(x - 1) + C$

Choose the **correct** answer from the options given below :

A	(A) - (III), (B) - (I), (C) - (II), (D) - (IV)
B	(A) - (II), (B) - (IV), (C) - (I), (D) - (III)
C	(A) - (III), (B) - (IV), (C) - (II), (D) - (I)
D	(A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Section Name: Mathematics Core

Question:

The value of $\int_0^1 \tan^{-1}\left(\frac{2x-1}{1+x-x^2}\right)dx$ is :

A	$\frac{\pi}{2}$
B	0
C	1
D	$\frac{\pi}{4}$

CUET 2022 QUESTION PAPER

Section Name: Mathematics Core

Question:

$$\int_1^e \frac{\log_e x}{x}\,dx \text{ is equal to :}$$

A	$\frac{1}{2}$
B	e
C	1
D	$\frac{1}{4}$

Section Name: Mathematics Core
Question:

The principal value of $\cos^{-1}\left(\cos\frac{7\pi}{6}\right) + \sin^{-1}\left(\sin\frac{7\pi}{6}\right)$ is :

A	$\frac{4\pi}{3}$
B	$\frac{2\pi}{3}$
C	π
D	$\frac{\pi}{3}$

Section Name: Mathematics Core

Question:

$$f(x) = \begin{cases} ax + 1, & x \leq 3 \\ bx + 3, & x > 3 \end{cases}$$ is continuous, then :

A	$2a + 2b = 3$
B	$3a + 3b = 2$
C	$3a - 3b = 2$
D	$2a - 2b = 3$

Section Name: Mathematics Core

Question:

The sum of the ordinates of the points where the tangents to the curve $y = x^3 - 3x^2 - 9x + 7$ are parallel to the x-axis is :

A	-24
B	16
C	-8
D	56

Question:

The solution of the differential equation $\frac{dy}{dx} = \frac{x + y}{x - y}$, is :

A $\tan^{-1}\left(\frac{y}{x}\right) = \log_e |x| + C$

B $\tan^{-1}\left(\frac{y}{x}\right) = \frac{1}{2}\log_e (x^2 + y^2) + C$

C $\tan^{-1}\frac{y}{x} = \log_e\left(\frac{x^2 + y^2}{x^2}\right) + C$

D $x^2 + y^2 = C\,(x^2 - y^2)$

Section Name: Mathematics Core
Question:

If the lines $\frac{x+1}{3} = \frac{y+2}{2k} = \frac{z-3}{-2}$ and $\frac{x-1}{2k} = \frac{y-1}{-1} = \frac{z-1}{2}$ are perpendicular, then k is equal to :

A	$-\frac{1}{2}$
B	-1
C	1
D	2

Section Name: Mathematics Core

Question:

Out of the given statements, choose the correct statements :

(A) The line $\frac{x-1}{1} = \frac{y-2}{1} = \frac{z-3}{1}$ is parallel to the plane $2x-y-z=3$.

(B) The direction ratios of the normal to the plane $x+y-z=4$ is 1, 1, -1.

(C) The direction ratios of the line $\frac{x}{3} = \frac{y}{2} = \frac{z}{1}$ is 3, 2, 1.

(D) If $\vec{a} = \hat{i} + \hat{j}$, then the unit vector $\hat{a} = \frac{\hat{i}+\hat{j}}{\sqrt{3}}$

(E) If $\vec{a} = \hat{i}$ and $\vec{b} = \hat{k}$, then the angle between $\vec{a}$ and $\hat{b}$ is zero.

Choose the **correct** answer from the options given below :

A	(A), (B), (D) only
B	(A), (B), (E) only
C	(C), (D), (E) only
D	(A), (B), (C) only

Section Name: Mathematics Core
Question:

The distance of the point $(2, 5, -3)$ from the plane $\vec{r} \cdot \left(6\hat{i} - 3\hat{j} + 2\hat{k}\right) = 4$ is :

A	$\frac{17}{7}$
B	$\frac{29}{7}$
C	$\frac{1}{7}$
D	$\frac{13}{7}$

Section Name: Mathematics Core
Question:

The acute angle between the two planes $2x+y-2z=5$ and $3x-6y-2z=7$ is :

A	$\cos^{-1}\left(\frac{4}{21}\right)$
B	$\cos^{-1}\left(\frac{16}{21}\right)$
C	$\sin^{-1}\left(\frac{2}{21}\right)$
D	$\sin^{-1}\left(\frac{4}{21}\right)$

Section Name: Mathematics Core

Question:

The differential equation representing family of curves $y = ae^{x} + be^{-2x}$, where a and b are arbitrary constants, is :

A $\frac{d^2y}{dx^2} + \frac{dy}{dx} - y = 0$

B $2\frac{d^2y}{dx^2} + 3\frac{dy}{dx} - 4y = 0$

C $\frac{d^2y}{dx^2} + \frac{dy}{dx} - 2y = 0$

D $\frac{d^2y}{dx^2} + 4y = 0$

Section Name: Mathematics Core

Question:

The equation of the plane, containing line of intersection of planes $x+3y-z=5$ and $2x-y+z=3$ and passes through $(2, 1, -2)$ is :

A	$3x+2y-8=0$
B	$x+3y+2z-8=0$
C	$3x+2y+2z-4=0$
D	$x+y+z-1=0$

Section Name: Mathematics Core

Question:

If two sides of triangle are represented by the vectors $-\hat{i}+\hat{j}+2\hat{k}$ and $2\hat{i}-\hat{j}+4\hat{k}$, then area of triangle is :

A	$\frac{1}{2}\sqrt{101}$
B	$\frac{1}{2}\sqrt{51}$
C	$\sqrt{101}$
D	5

Section Name: Mathematics Core

Question:

The unit vectors perpendicular to planes $x+2y+3z-1=0$ and $x+y-z+8=0$ are :

A $\pm \frac{1}{\sqrt{3}}\left(\hat{i}-\hat{j}+\hat{k}\right)$

B $\pm \frac{1}{7}\left(2\hat{i}-3\hat{j}+6\hat{k}\right)$

C $\pm \frac{1}{\sqrt{42}}\left(5\hat{i}-4\hat{j}+\hat{k}\right)$

D $\pm \frac{1}{\sqrt{11}}\left(3\hat{i}-\hat{j}-\hat{k}\right)$

Section Name: Mathematics Core

Question:

The optimal value of the linear programming problem

$\min(z) = 3x + 9y$

subject to constraints

$$x + 3y \leq 60,$$

$$x + y \geqslant 10,$$

$$x \leq y,$$

$x \geqslant 0$ and $y \geqslant 0$ is :

A	0
B	30
C	90
D	60

Section Name: Mathematics Core

Question:

Three identical boxes have 2 coins each as follows : box-1 has 2 gold coins, box-2 has 2 silver coins, box-3 has one gold and one siver coin. If a box is chosen at random and one gold coin is taken out from it, then the probability that the other coin in the box is also of gold is :

A	$\frac{2}{3}$
B	$\frac{2}{5}$
C	$\frac{1}{3}$
D	$\frac{1}{2}$

Section Name: Mathematics Core

Question:

A person P fires 4 shots at a target. It the probability of each shot hitting the target is 0.7, then the probability that - P hits the target atleast once is :

A	0.2401
B	0.0081
C	0.9919
D	0.7599

Section Name: Mathematics Core

Question:

For two vectors $\vec{a}$ and $\vec{b}$, If $|\vec{a}| = 2, |\vec{b}| = 3$ and $|\vec{a} \times \vec{b}| = 2\sqrt{5}$ then answer the following question :

$|\vec{a} - \vec{b}|$ is equal to :

A	5
B	$\sqrt{5}$
C	1
D	3

Section Name: Mathematics Core

Question:

For two vectors $\vec{a}$ and $\vec{b}$, If $|\vec{a}| = 2$, $|\vec{b}| = 3$ and $|\vec{a} \times \vec{b}| = 2\sqrt{5}$ then answer the following question :

$|\vec{a} + \vec{b}|$ is equal to :

A	$\sqrt{21}$
B	21
C	$\sqrt{5}$
D	5

Question:

For two vectors $\vec{a}$ and $\vec{b}$, If $|\vec{a}| = 2, |\vec{b}| = 3$ and $|\vec{a} \times \vec{b}| = 2\sqrt{5}$ then answer the following question :

The projection of $\vec{a}$ on $\vec{b}$ is :

A	2
B	$\frac{8}{3}$
C	$\frac{4}{3}$
D	6

Section Name: Mathematics Core

Question:

For two vectors $\vec{a}$ and $\vec{b}$, If $|\vec{a}| = 2$, $|\vec{b}| = 3$ and $|\vec{a} \times \vec{b}| = 2\sqrt{5}$ then answer the following question :

If θ is the angle between the vectors $\vec{a} + \vec{b}$ and $\vec{a} - \vec{b}$ then $\sin^2\theta$ is equal to :

A	$\frac{5}{21}$
B	$\frac{20}{21}$
C	$\frac{5}{9}$
D	$\frac{16}{21}$

Section Name: Mathematics Core

Question:

For two vectors $\vec{a}$ and $\vec{b}$, If $|\vec{a}| = 2, |\vec{b}| = 3$ and $|\vec{a} \times \vec{b}| = 2\sqrt{5}$ then answer the following question :

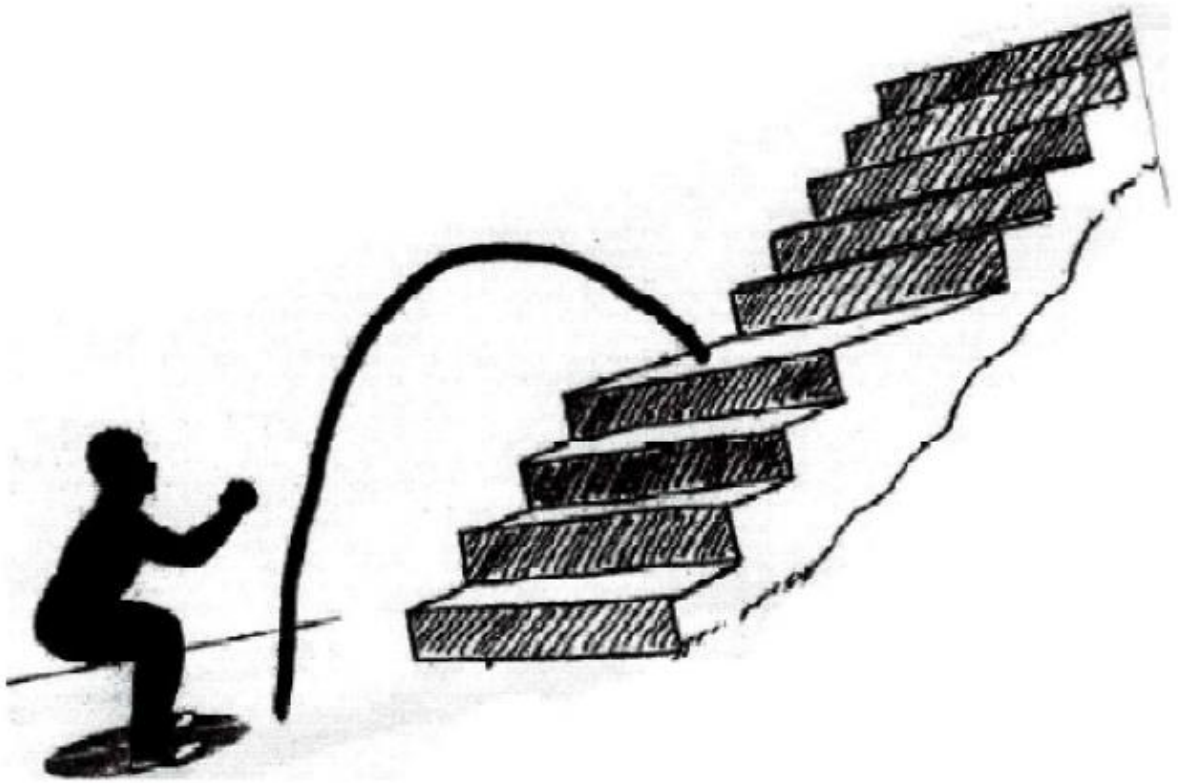
The area of the triangle formed by the vectors $\vec{a}$ and $\vec{b}$ is :

A	$\sqrt{5}$
B	$2\sqrt{5}$
C	3
D	6

Question:

Based on the given information answer the following questions :

A man plans to jump and climb the stairs. If the path (as shown in the figure), he moves on for the first jump is given by the function $y = f(x) = 2x + \sqrt{4x - 12x^2}$, where x (in meters) is the horizontal distance covered and y (in meter) is the corresponding height attained. Assume that his initial position is origin.



The domain of the function is :

A	$\left[-\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right]$
B	$\left[0, \frac{1}{3}\right]$
C	$\left[0, \frac{2}{3}\right]$
D	$\left[\frac{1}{3}, 3\right]$

The function is strictly increasing in :

A	$\left(0, \frac{1}{3}\right)$
B	$\left(0, \frac{1}{4}\right)$
C	
D	$\left(\frac{1}{12}, \frac{1}{3}\right)$