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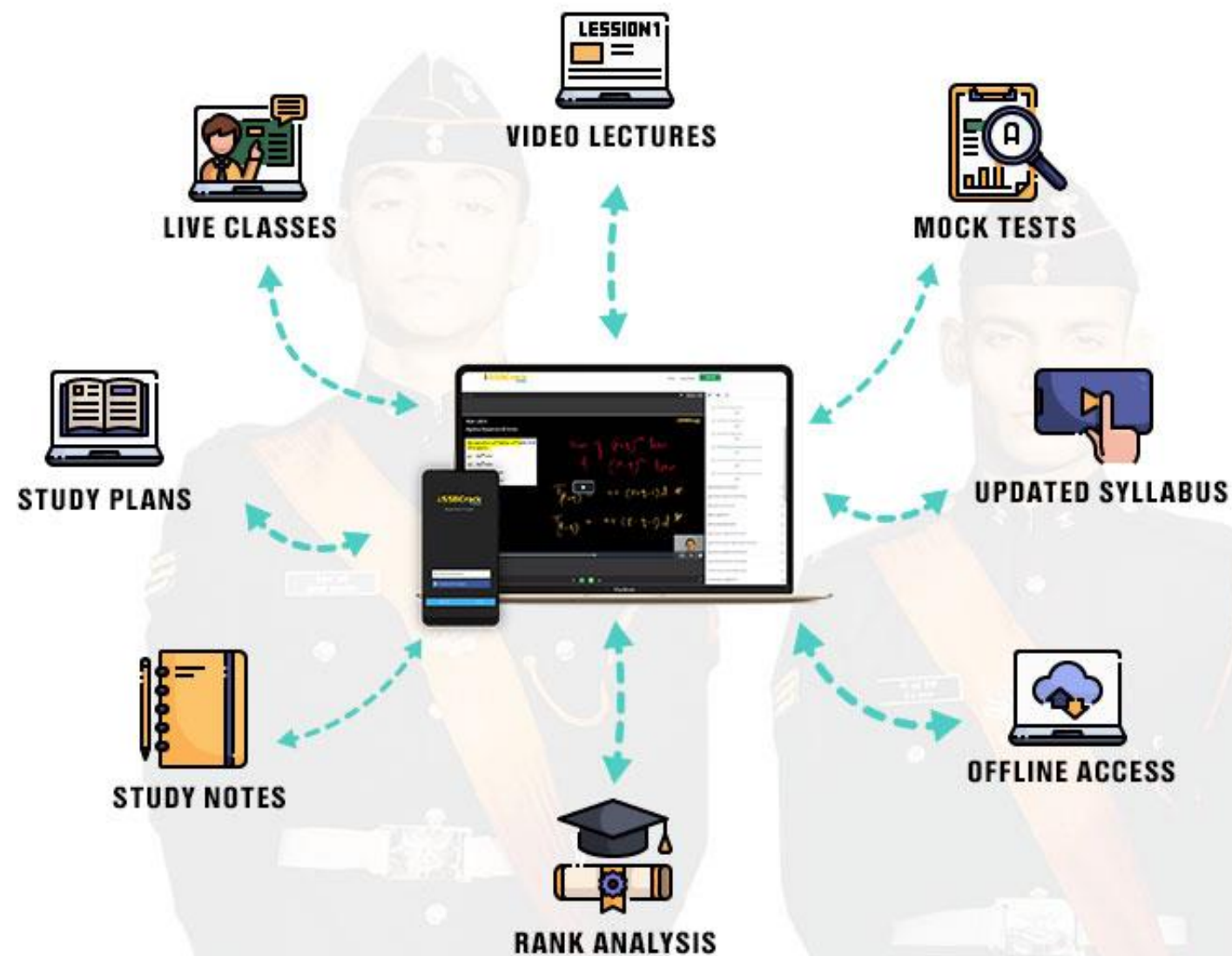Google Play

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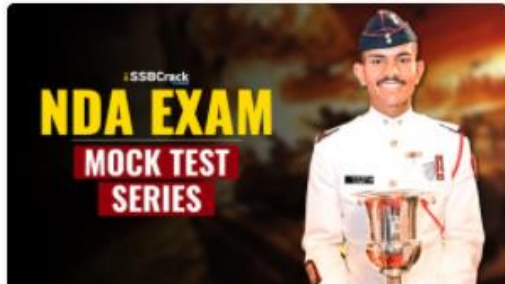₹3,999 ~~₹4,999~~ 20% OFF

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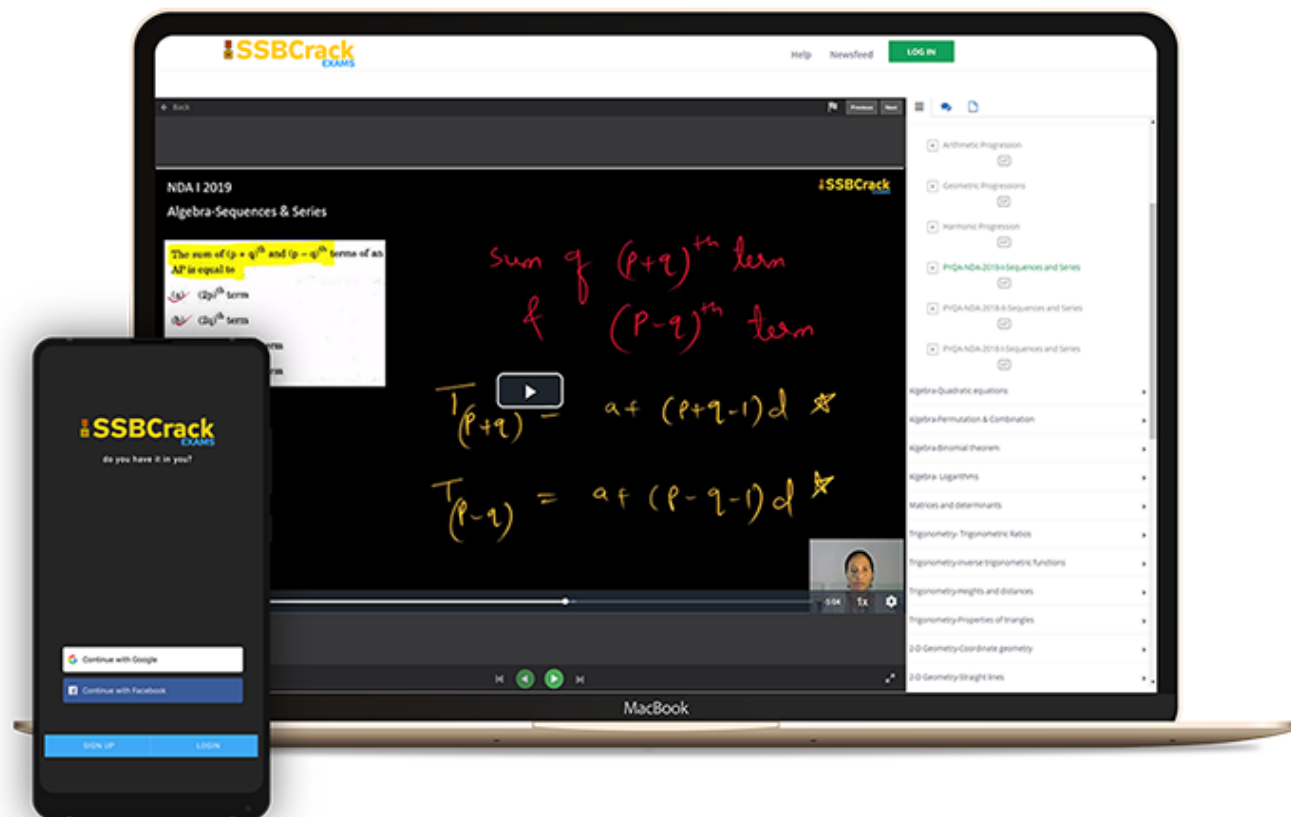### AFCAT 2022 Mock Test Series

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TIME TABLE

DATE	TIME	SUBJECT
23 AUG 2022	6 PM TO 9 PM	Geography
29 AUG 2022	10 AM TO 1 PM	History
31 AUG 2022	10 AM TO 1 PM	Polity
31 AUG 2022	2 PM TO 5 PM	English Part 1
31 AUG 2022	6 PM TO 9 PM	Maths Part 1
01 SEP 2022	2 PM TO 5 PM	English Part 2
01 SEP 2022	6 PM to 9 PM	Maths Part 2
02 SEP 2022	10 AM TO 1 PM	Physics
02 SEP 2022	2 PM TO 5 PM	Maths Part 3
02 SEP 2022	6 PM TO 9 PM	Chemistry & Biology
03 SEP 2022	10 AM TO 1 PM	Current Affairs
03 SEP 2022	2 PM TO 5 PM	Defence Affairs

Q) $\tan 54°$ can be expressed as

(a) $\dfrac{\sin 9° + \cos 9°}{\sin 9° - \cos 9°}$

(b) $\dfrac{\sin 9° - \cos 9°}{\sin 9° + \cos 9°}$

(c) $\dfrac{\cos 9° + \sin 9°}{\cos 9° - \sin 9°}$

(d) $\dfrac{\sin 36°}{\cos 36°}$

0:20

Q) $\tan 54°$ can be expressed as

(a) $\dfrac{\sin 9° + \cos 9°}{\sin 9° - \cos 9°}$

(b) $\dfrac{\sin 9° - \cos 9°}{\sin 9° + \cos 9°}$

(c) $\dfrac{\cos 9° + \sin 9°}{\cos 9° - \sin 9°}$

(d) $\dfrac{\sin 36°}{\cos 36°}$

Ans: (c)

Q) What is $\displaystyle\int_0^a \frac{f(a-x)}{f(x)+f(a-x)} \, dx$ equal to?

(a) a

(b) $2a$

(c) 0

(d) $\dfrac{a}{2}$

0:20

Q) What is $\int_0^a \dfrac{f(a-x)}{f(x)+f(a-x)}\, dx$ equal to?

(a) a

(b) $2a$

(c) 0

(d) $\dfrac{a}{2}$

Ans: (d)

Q) Let $\sin x + \sin y = \cos x + \cos y$ for all $x, y \in \mathbb{R}$. What is $\tan\left(\dfrac{x}{2} + \dfrac{y}{2}\right)$ equal to?

(a) 1

(b) 2

(c) $\sqrt{2}$

(d) $2\sqrt{2}$

0:20

Q) Let $\sin x + \sin y = \cos x + \cos y$ for all $x, y \in \mathbb{R}$. What is $\tan\left(\dfrac{x}{2} + \dfrac{y}{2}\right)$ equal to?

(a) 1

(b) 2

(c) $\sqrt{2}$

(d) $2\sqrt{2}$

Ans: (b)

Q) What is the area of the region enclosed between the curve $y^2 = 2x$ and the straight line $y = x$?

(a) $\dfrac{2}{3}$ sq unit

(b) $\dfrac{4}{3}$ sq unit

(c) $\dfrac{1}{3}$ sq unit

(d) 1 sq unit

0:20

Q) What is the area of the region enclosed between the curve $y^2 = 2x$ and the straight line $y = x$?

(a) $\dfrac{2}{3}$ sq unit

(b) $\dfrac{4}{3}$ sq unit

(c) $\dfrac{1}{3}$ sq unit

(d) 1 sq unit

Ans: (a)

Q) If $y=(1+x)(1+x^2)(1+x^4)(1+x^8)$

$(1+x^{16})$, then what is $\dfrac{dy}{dx}$ at $x = 0$

equal to?

(a) 0

(b) 1

(c) 2

(d) 4

0:20

Q) If $y=(1+x)(1+x^2)(1+x^4)(1+x^8)$

$(1+x^{16})$, then what is $\dfrac{dy}{dx}$ at $x=0$

equal to?

(a) 0   (b) 1

(c) 2   (d) 4

Ans: (b)

Q) What is $C(47, 4) + C(51, 3) + C(50, 3)$

$+ C(49, 3) + C(48, 3) + C(47, 3)$ equal to?

(a) $C(47, 4)$ (b) $C(52, 5)$
(c) $C(52, 4)$ (d) $C(47, 5)$

0:20

Q) What is $C(47, 4) + C(51, 3) + C(50, 3)$

$+ C(49, 3) + C(48, 3) + C(47, 3)$ equal to?

(a) $C(47, 4)$ (b) $C(52, 5)$

(c) $C(52, 4)$ (d) $C(47, 5)$

Ans: (c)

Q) What is the value of

$$2 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \dots \infty}}} \; ?$$

(a) $\sqrt{2} - 1$ (b) $\sqrt{2} + 1$ (c) 3 (d) 4

0:20

Q) What is the value of

$$2 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \ldots \infty}}}?$$

(a) $\sqrt{2} - 1$ (b) $\sqrt{2} + 1$ (c) 3 (d) 4

Ans: (b)

Q) Let the equation $\sec x \cdot \operatorname{cosec} x = p$ have a solution, where p is a positive real number. What should be the smallest value of p?

(a) $\dfrac{1}{2}$ (b) 1

(c) 2

(d) Minimum does not exist

0:20

Q) Let the equation $\sec x \cdot \operatorname{cosec} x = p$ have a solution, where p is a positive real number. What should be the smallest value of p?

(a) $\dfrac{1}{2}$

(b) 1

(c) 2

(d) Minimum does not exist

Ans: (c)

Q) What is $\cot 2x \cot 4x - \cot 4x \cot 6x - \cot 6x \cot 2x$ equal to?

(a) -1 (b) 0   (c) 1   (d) 2

0:20

Q) What is $\cot 2x \cot 4x - \cot 4x \cot 6x - \cot 6x \cot 2x$ equal to?

(a) -1 (b) 0 (c) 1 (d) 2

Ans: (c)

Q) If $\Delta = \begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix}$

then what is

$\begin{vmatrix} 3d + 5g & 4a + 7g & 6g \\ 3e + 5h & 4b + 7h & 6h \\ 3f + 5i & 4c + 7i & 6i \end{vmatrix}$ equal to?

(a) Δ

(b) 7Δ

(c) 72Δ

(d) -72Δ

0:20

Q) If $\Delta = \begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix}$

then what is

$\begin{vmatrix} 3d + 5g & 4a + 7g & 6g \\ 3e + 5h & 4b + 7h & 6h \\ 3f + 5i & 4c + 7i & 6i \end{vmatrix}$ equal to?

(a) Δ (b) 7Δ

(c) 72Δ (d) -72Δ

Ans: (d)

Q)

What is the value of $\begin{vmatrix} -a^2 & ab & ac \\ ab & -b^2 & bc \\ ac & bc & -c^2 \end{vmatrix}$?

(a) 4abc

(b) $4a^2bc$

(c) $4a^2b^2c^2$

(d) $-4a^2b^2c^2$

0:20

Q)

What is the value of $\begin{vmatrix} -a^2 & ab & ac \\ ab & -b^2 & bc \\ ac & bc & -c^2 \end{vmatrix}$?

(a) $4abc$

(b) $4a^2bc$

(c) $4a^2b^2c^2$

(d) $-4a^2b^2c^2$

Ans: (c)

Q) There are 3 coins in a box. One is a two-headed coin; another is a fair coin; and third is biased coin that comes up heads 75% of time. When one of the three coins is selected at random and flipped, it shows heads. What is the probability that it was the two-headed coin?

(a) $\dfrac{2}{9}$

(b) $\dfrac{1}{3}$

(c) $\dfrac{4}{9}$
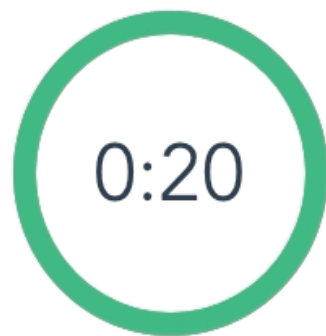
(d) $\dfrac{5}{9}$

0:20

Q) There are 3 coins in a box. One is a two-headed coin; another is a fair coin; and third is biased coin that comes up heads 75% of time. When one of the three coins is selected at random and flipped, it shows heads. What is the probability that it was the two-headed coin?

(a) $\dfrac{2}{9}$

(b) $\dfrac{1}{3}$

(c) $\dfrac{4}{9}$

(d) $\dfrac{5}{9}$

Ans: (c)

Q) What is $(1 + \cot\theta - \text{cosec}\,\theta)$ $(1 + \tan\theta + \sec\theta)$ equal to?

(a) 1   (b) 2   (c) 3   (d) 4

0:20

Q) What is $(1 + \cot\theta - \text{cosec}\theta)$ $(1 + \tan\theta + \sec\theta)$ equal to?

(a) 1   (b) 2   (c) 3   (d) 4

Ans: (b)

Q) The equation $\sin^{-1} x - \cos^{-1} x = \dfrac{\pi}{6}$ has

(a) no solution

(b) unique solution

(c) two solutions

(d) infinite number of solutions

0:20

Q) The equation $\sin^{-1} x - \cos^{-1} x = \dfrac{\pi}{6}$ has

(a) no solution

(b) unique solution

(c) two solutions

(d) infinite number of solutions

Ans: (b)

Q) What is $\dfrac{1 + \tan^2\theta}{1 + \cot^2\theta} - \left(\dfrac{1 - \tan\theta}{1 - \cot\theta}\right)^2$ equal to?

0:20

Q) What is $\dfrac{1 + \tan^2\theta}{1 + \cot^2\theta} - \left(\dfrac{1 - \tan\theta}{1 - \cot\theta}\right)^2$

equal to?

Ans: (a)

Q) If $f(x) = e^{|x|}$, then which one of the following is correct?

(a) $f'(0) = 1$

(b) $f'(0) = -1$

(c) $f'(0) = 0$

(d) $f'(0)$ does not exist

0:20

Q) If $f(x) = e^{|x|}$, then which one of the following is correct?

(a) $f'(0) = 1$

(b) $f'(0) = -1$

(c) $f'(0) = 0$

(d) $f'(0)$ does not exist

Ans: (d)

Q) If $f(x) = x \ln x$, then $f(x)$ attains minimum value at which one of the following points?

(a) $x = e^{-2}$

(b) $x = e$

(c) $x = e^{-1}$

(d) $x = 2e^{-1}$

0:20

Q) If $f(x) = x \ln x$, then $f(x)$ attains minimum value at which one of the following points?

(a) $x = e^{-2}$

(b) $x = e$

(c) $x = e^{-1}$

(d) $x = 2e^{-1}$

Ans: (c)

Q)If $f(x) = \dfrac{[x]}{|x|}$, $x \neq 0$,

where [ ] denotes the greatest integer function, then what is the right-hand limit of $f(x)$ at $x = 1$?

(a) − 1

(b) 0

(c) 1

(d) Right-hand limit of $f(x)$ at $x = 1$ does not exist

0:20

Q)If $f(x) = \dfrac{[x]}{|x|}$, $x \neq 0$,

where $[\ ]$ denotes the greatest integer function, then what is the right-hand limit of $f(x)$ at $x = 1$?

(a) -1

(b) 0

(c) 1

(d) Right-hand limit of $f(x)$ at $x = 1$ does not exist

Ans: (c)

Q) What is $\displaystyle\int \dfrac{dx}{\sec x + \tan x}$ equal to?

(a) $\ln(\sec x) + \ln|\sec x + \tan x| + c$

(b) $\ln(\sec x) - \ln|\sec x + \tan x| + c$

(c) $\sec x \tan x - \ln|\sec x - \tan x| + c$

(d) $\ln|\sec x + \tan x| - \ln|\sec x| + c$

0:20

Q) What is $\displaystyle\int \frac{dx}{\sec x + \tan x}$ equal to?

(a) $\ln(\sec x) + \ln|\sec x + \tan x| + c$

(b) $\ln(\sec x) - \ln|\sec x + \tan x| + c$

(c) $\sec x \tan x - \ln|\sec x - \tan x| + c$

(d) $\ln|\sec x + \tan x| - \ln|\sec x| + c$

Ans: (d)

Q) If $7\sin\theta + 24\cos\theta = 25$, then what is the value of $(\sin\theta + \cos\theta)$?

(a) 1 (b) $\dfrac{26}{25}$ (c) $\dfrac{6}{5}$ (d) $\dfrac{31}{25}$

0:20

Q) If $7\sin\theta + 24\cos\theta = 25$, then what is the value of $(\sin\theta + \cos\theta)$?

(a) 1   (b) $\dfrac{26}{25}$ (c) $\dfrac{6}{5}$ (d) $\dfrac{31}{25}$

Ans: (d)

Q) Suppose 20 distinct points are placed randomly on a circle. Which of the following statements is/are correct?

1. The number of straight lines that can be drawn by joining any two of these points is 380.
2. The number of triangles that can be drawn by joining any three of these points is 1140.

Select the correct answer using the code given below.

(a) 1 only   (b) 2 only
(c) Both 1 and 2   (d) Neither 1 nor 2

0:20

Q) Suppose 20 distinct points are placed randomly on a circle. Which of the following statements is/are correct?

1. The number of straight lines that can be drawn by joining any two of these points is 380.

2. The number of triangles that can be drawn by joining any three of these points is 1140.

Select the correct answer using the code given below.

(a) 1 only   (b) 2 only

(c) Both 1 and 2   (d) Neither 1 nor 2

Ans: (b)

Q)

$$\text{If } \begin{vmatrix} a & -b & a-b-c \\ -a & b & -a+b-c \\ -a & -b & -a-b+c \end{vmatrix} - kabc = 0$$

$(a \neq 0,\ b \neq 0,\ c \neq 0)$

then what is the value of k?

(a) -4 (b) -2

(c) 2 (d) 4

0:20

Q)

If $\begin{vmatrix} a & -b & a-b-c \\ -a & b & -a+b-c \\ -a & -b & -a-b+c \end{vmatrix} - kabc = 0$

$(a \neq 0, b \neq 0, c \neq 0)$
then what is the value of k?

(a) -4 (b) -2

(c) 2 (d) 4

Ans: (a)

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Q) The inverse of a matrix A is given

by $\begin{bmatrix} -2 & 1 \\ \dfrac{3}{2} & -\dfrac{1}{2} \end{bmatrix}$

What is A equal to?

(a) $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

(b) $\begin{bmatrix} 1 & -2 \\ -3 & 4 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & 2 \\ 3 & -4 \end{bmatrix}$

(d) $\begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix}$

0:20

Q) The inverse of a matrix A is given

by $\begin{bmatrix} -2 & 1 \\ \dfrac{3}{2} & -\dfrac{1}{2} \end{bmatrix}$

What is A equal to?

(a) $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

(b) $\begin{bmatrix} 1 & -2 \\ -3 & 4 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & 2 \\ 3 & -4 \end{bmatrix}$

(d) $\begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix}$

Ans: (a)

Q) The shadow of a tower is found to be x metre longer, when the angle of elevation of the sun changes from 60° to 45°. If the height of the tower is $5(3 + \sqrt{3})$ m, then what is x equal to?

(a) 8 m   (b) 10 m
(c) 12 m   (d) 15 m

0:20

Q) The shadow of a tower is found to be x metre longer, when the angle of elevation of the sun changes from 60° to 45°. If the height of the tower is $5(3 + \sqrt{3})$ m, then what is x equal to?

(a) 8 m

(b) 10 m

(c) 12 m

(d) 15 m

Ans: (b)

Q) What is the value of the following?

$\tan 31° \tan 33° \tan 35° ... \tan 57° \tan 59°$

(a) -1 (b) 0   (c) 1   (d) 2

0:20

Q) What is the value of the following?

$\tan 31° \tan 33° \tan 35° \dots \tan 57° \tan 59°$

(a) -1 (b) 0 (c) 1 (d) 2

Ans: (c)

Q) What is $\displaystyle\int \frac{dx}{x(1+\ln x)^n}$ equal to $(n \neq 1)$?

(a) $\dfrac{1}{(n-1)(1+\ln x)^{n-1}} + c$

(b) $\dfrac{1-n}{(1+\ln x)^{1-n}} + c$

(c) $\dfrac{n+1}{(1+\ln x)^{n+1}} + c$

(d) $-\dfrac{1}{(n-1)(1+\ln x)^{n-1}} + c$

0:20

Q) What is $\displaystyle\int \frac{dx}{x(1 + \ln x)^n}$ equal to

$(n \neq 1)$?

(a) $\displaystyle\frac{1}{(n-1)(1+\ln x)^{n-1}} + c$

(b) $\displaystyle\frac{1-n}{(1+\ln x)^{1-n}} + c$

(c) $\displaystyle\frac{n+1}{(1+\ln x)^{n+1}} + c$

(d) $\displaystyle-\frac{1}{(n-1)(1+\ln x)^{n-1}} + c$

Ans: (d)

Q) What is the area of the region bounded by $|x| < 5$, $y = 0$ and $y = 8$?

(a) 40 sq units   (b) 80 sq units

(c) 120 sq units   (d) 160 sq units

0:20

Q) What is the area of the region bounded by $|x| < 5$, $y = 0$ and $y = 8$?

(a) 40 sq units   (b) 80 sq units

(c) 120 sq units   (d) 160 sq units

Ans: (b)

Q) If $\log_{10} 2 \log_2 10 + \log_{10}(10^x) = 2,$
then what is the value of x?

(a) 0

(b) 1

(c) $\log_2 10$

(d) $\log_5 2$

0:20

Q) If $\log_{10} 2 \log_2 10 + \log_{10}(10^x) = 2,$

then what is the value of x?
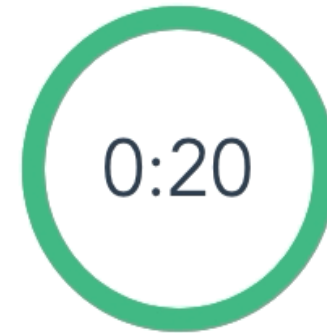
(a) 0   (b) 1

(c) $\log_2 10$ (d) $\log_5 2$

Ans: (b)

Q) For what value of k is the function

$$f(x) = \begin{cases} 2x + \dfrac{1}{4}, & x < 0 \\ k, & x = 0 \\ \left(x + \dfrac{1}{2}\right)^2, & x > 0 \end{cases}$$ continuous?

0:20

(a) $\dfrac{1}{4}$ (b) $\dfrac{1}{2}$ (c) 1   (d) 2

Q) For what value of k is the function

$$f(x) = \begin{cases} 2x + \dfrac{1}{4}, & x < 0 \\ k & , x = 0 \\ \left(x + \dfrac{1}{2}\right)^2, & x > 0 \end{cases}$$ continuous?

(a) $\dfrac{1}{4}$ (b) $\dfrac{1}{2}$ (c) 1   (d) 2

Ans: (a)

Q) What is the acute angle between the lines $x - 2 = 0$ and $\sqrt{3}x - y - 2 = 0$?

(a) 0°   (b) 30°   (c) 45°   (d) 60°

0:20

Q) What is the acute angle between the lines $x - 2 = 0$ and $\sqrt{3}x - y - 2 = 0$?

(a) 0°   (b) 30°   (c) 45°   (d) 60°

Ans: (b)

Q) If the image of the point $(-4, 2)$ by a line mirror is $(4, -2)$, then what is the equation of the line mirror?

(a) $y = x$

(b) $y = 2x$

(c) $4y = x$

(d) $y = 4x$

0:20

Q) If the image of the point $(-4, 2)$ by a line mirror is $(4, -2)$, then what is the equation of the line mirror?

(a) $y = x$ (b) $y = 2x$

(c) $4y = x$ (d) $y = 4x$

Ans: (b)

Q) How many real roots does the equation $x^2 + 3|x| + 2 = 0$ have?

(a) Zero

(b) One

(c) Two

(d) Four

0:20

Q) How many real roots does the equation $x^2 + 3|x| + 2 = 0$ have?

(a) Zero

(b) One

(c) Two

(d) Four

Ans: (a)

Q) What is the value of the following?

$$\cot\left[\sin^{-1}\left(\frac{3}{5}\right) + \cot^{-1}\left(\frac{3}{2}\right)\right]$$

(a) $\dfrac{6}{17}$

(b) $\dfrac{7}{16}$

(c) $\dfrac{16}{7}$

(d) $\dfrac{17}{6}$

0:20

Q) What is the value of the following?

$$\cot\left[\sin^{-1}\left(\frac{3}{5}\right) + \cot^{-1}\left(\frac{3}{2}\right)\right]$$

(a) $\dfrac{6}{17}$

(b) $\dfrac{7}{16}$

(c) $\dfrac{16}{7}$

(d) $\dfrac{17}{6}$

Ans: (a)

Q) If $z = 1 + i$, where $i = \sqrt{-1}$, then what is the modulus of

$z + \dfrac{2}{z}$?

(a) 1   (b) 2   (c) 3   (d) 4

0:20

Q) If $z = 1 + i$, where $i = \sqrt{-1}$, then what is the modulus of

$z + \dfrac{2}{z}$?

(a) 1   (b) 2   (c) 3   (d) 4

Ans: (b)

Q) What is the scalar projection of

$a = \hat{i} - 2\hat{j} + \hat{k}$ on $b = 4\hat{i} - 4\hat{j} + 7\hat{k}$?

(a) $\dfrac{\sqrt{6}}{9}$ (b) $\dfrac{19}{9}$ (c) $\dfrac{9}{19}$ (d) $\dfrac{\sqrt{6}}{19}$

0:20

Q) What is the scalar projection of

$\mathbf{a} = \hat{\mathbf{i}} - 2\hat{\mathbf{j}} + \hat{\mathbf{k}}$ on $\mathbf{b} = 4\hat{\mathbf{i}} - 4\hat{\mathbf{j}} + 7\hat{\mathbf{k}}$?

(a) $\dfrac{\sqrt{6}}{9}$ (b) $\dfrac{19}{9}$ (c) $\dfrac{9}{19}$ (d) $\dfrac{\sqrt{6}}{19}$

Ans: (b)

Q) Seven white balls and three black balls are randomly placed in a row. What is the probability that no two black balls are placed adjacently?

(a) $\dfrac{7}{15}$

(b) $\dfrac{8}{15}$

(c) $\dfrac{11}{15}$

(d) $\dfrac{13}{15}$

0:20

Q) Seven white balls and three black balls are randomly placed in a row. What is the probability that no two black balls are placed adjacently?

(a) $\dfrac{7}{15}$

(b) $\dfrac{8}{15}$

(c) $\dfrac{11}{15}$

(d) $\dfrac{13}{15}$

Ans: (a)

Q) What is the derivative of e^{e^x} with respect to e^x?

(a) e^{e^x}

(b) e^x

(c) $e^{e^x} e^x$

(d) ee^x

0:20

Q) What is the derivative of e^{e^x} with respect to e^x?

(a) e^{e^x}

(b) e^x

(c) $e^{e^x} e^x$

(d) ee^x

Ans: (a)

Q) If $14\sin^2\theta + 10\cos^2\theta = 11$ where

$0° < \theta < 90°$ then what is the value of

$\tan\theta + \cot\theta$?

(a) $\dfrac{4}{\sqrt{3}}$ (b) $\dfrac{2}{\sqrt{3}}$

(c) $\sqrt{3}$ (d) $2\sqrt{3}$

0:20

Q) If $14 \sin^2 \theta + 10 \cos^2 \theta = 11$ where

$0° < \theta < 90°$ then what is the value of

$\tan \theta + \cot \theta$?

(a) $\dfrac{4}{\sqrt{3}}$

(b) $\dfrac{2}{\sqrt{3}}$

(c) $\sqrt{3}$

(d) $2\sqrt{3}$

Ans: (a)

Q) If the magnitude of the sum of two non-zero vectors is equal to the magnitude of their difference, then which one of the following is correct?

(a) The vectors are parallel
(b) The vectors are perpendicular
(c) The vectors are anti-parallel
(d) The vectors must be unit vectors

0:20

Q) If the magnitude of the sum of two non-zero vectors is equal to the magnitude of their difference, then which one of the following is correct?

(a) The vectors are parallel
(b) The vectors are perpendicular
(c) The vectors are anti-parallel
(d) The vectors must be unit vectors

Ans: (b)

Q) If A and B are two events such that
$P(\text{not } A) = \dfrac{7}{10}$, $P(\text{not } B) = \dfrac{3}{10}$ and

$P(A \mid B) = \dfrac{3}{14}$, then what is $P(B \mid A)$

equal to?

(a) $\dfrac{11}{14}$

(b) $\dfrac{9}{14}$

(c) $\dfrac{1}{4}$

(d) $\dfrac{1}{2}$

0:20

Q) If A and B are two events such that

$P(\text{not } A) = \dfrac{7}{10}$, $P(\text{not } B) = \dfrac{3}{10}$ and

$P(A \mid B) = \dfrac{3}{14}$, then what is $P(B \mid A)$

equal to?

(a) $\dfrac{11}{14}$ (b) $\dfrac{9}{14}$

(c) $\dfrac{1}{4}$ (d) $\dfrac{1}{2}$

Ans: (d)

Q) A parallelogram has three consecutive vertices $(-3, 4), (0, -4)$ and $(5, 2)$. The fourth vertex is

(a) (2, 10) (b) (2, 9)

(c) (3, 9) (d) (4, 10)

0:20

Q) A parallelogram has three consecutive vertices $(-3, 4), (0, -4)$ and $(5, 2)$. The fourth vertex is

(a) (2, 10)   (b) (2, 9)

(c) (3, 9)   (d) (4, 10)

Ans: (a)

Q) What is the derivative of

$\sin(\ln x) + \cos(\ln x)$ with respect to x

at $x = e$?

(a) $\dfrac{\cos 1 - \sin 1}{e}$

(b) $\dfrac{\sin 1 - \cos 1}{e}$

(c) $\dfrac{\cos 1 + \sin 1}{e}$

(d) 0

0:20

Q) What is the derivative of

$\sin(\ln x) + \cos(\ln x)$ with respect to x

at $x = e$?

(a) $\dfrac{\cos 1 - \sin 1}{e}$

(b) $\dfrac{\sin 1 - \cos 1}{e}$

(c) $\dfrac{\cos 1 + \sin 1}{e}$

(d) 0

Ans: (a)

Q) What is the value of

$1 - 2 + 3 - 4 + 5 - ..... + 101$?

(a) 51   (b) 55

(c) 110   (d) 111

0:20

Q) What is the value of

$1 - 2 + 3 - 4 + 5 - ..... + 101$?

(a) 51   (b) 55

(c) 110   (d) 111

Ans: (a)

Q) Consider the following

1. $\sin^4 \theta - \sin^2 \theta = \cos^4 \theta - \cos^2 \theta$

2. $\sin^4 \theta + \cos^4 \theta = 1 + 2\sin^2 \theta \cos^2 \theta$

3. $\tan^4 \theta + \tan^2 \theta = \sec^4 \theta - \sec^2 \theta$

Which of the above are identities?

   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 1 and 3 only
   (d) 1, 2 and 3

0:20

Q) Consider the following

1. $\sin^4 \theta - \sin^2 \theta = \cos^4 \theta - \cos^2 \theta$

2. $\sin^4 \theta + \cos^4 \theta = 1 + 2\sin^2 \theta \cos^2 \theta$

3. $\tan^4 \theta + \tan^2 \theta = \sec^4 \theta - \sec^2 \theta$

Which of the above are identities?

    (a) 1 and 2 only
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) 1, 2 and 3

Ans: (c)

Q) What is the area of the parallelogram having diagonals

$3\hat{i}+\hat{j}-2\hat{k}$ and $\hat{i}-3\hat{j}+4\hat{k}$?

a) $5\sqrt{5}$ square units

b) $4\sqrt{5}$ square units

c) $5\sqrt{3}$ square units

d) $15\sqrt{2}$ square units

0:20

Q) What is the area of the parallelogram having diagonals

$3\hat{i} + \hat{j} - 2\hat{k}$ and $\hat{i} - 3\hat{j} + 4\hat{k}$?

a) $5\sqrt{5}$ square units

b) $4\sqrt{5}$ square units

c) $5\sqrt{3}$ square units

d) $15\sqrt{2}$ square units

Ans: (c)

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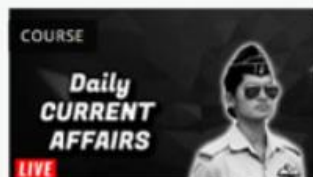
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Q) What is $\int_0^{\frac{\pi}{2}} e^{\ln(\cos x)} \, dx$ equal to?

(a) −1

(b) 0

(c) 1

(d) 2

0:20

Q) What is $\int_0^{\frac{\pi}{2}} e^{\ln(\cos x)} \, dx$ equal to?

(a) -1

(b) 0

(c) 1

(d) 2

Ans: (c)

Q) For the data

3, 5, 1, 6, 5, 9, 5, 2, 8, 6

the mean, median and mode are x, y and z respectively.
Which one of the following is correct?

(a) $x = y \neq z$

(b) $x \neq y = z$

(c) $x \neq y \neq z$

(d) $x = y = z$

0:20

Q) For the data

3, 5, 1, 6, 5, 9, 5, 2, 8, 6

the mean, median and mode are x, y and z respectively. Which one of the following is correct?

(a) $x = y \neq z$

(b) $x \neq y = z$

(c) $x \neq y \neq z$

(d) $x = y = z$

Ans: (d)

Q) If $A = \{x : 0 \le x \le 2\}$ and $B = \{y : y$ is a prime number$\}$, then what is $A \cap B$ equal to?

(a) ϕ (b) $\{1\}$ (c) $\{2\}$ (d) $\{1, 2\}$

0:20

Q) If $A = \{x : 0 \le x \le 2\}$ and $B = \{y : y$ is a prime number$\}$, then what is $A \cap B$ equal to?

(a) ϕ (b) $\{1\}$ (c) $\{2\}$ (d) $\{1, 2\}$

Ans: (c)

Q) Two cards are drawn successively without replacement from a well shuffled pack of 52 cards. The probability of drawing two aces is

a) 1/26

b) 1/221

c) 4/223

d) 1/13

0:20

Q) Two cards are drawn successively without replacement from a well shuffled pack of 52 cards. The probability of drawing two aces is

a) 1/26

b) 1/221

c) 4/223

d) 1/13

Ans: (b)

Q) What is the number of diagonals of an octagon?

(a) 48
(b) 40
(c) 28
(d) 20

0:20

Q) What is the number of diagonals of an octagon?

(a) 48
(b) 40
(c) 28
(d) 20

Ans: (d)

Q) If a set A contains 3 elements and another set B contains 6 elements, then what is the minimum number of elements that $(A \cup B)$ can have?

(a) 3 (b) 6

(c) 8 (d) 9

0:20

Q) If a set A contains 3 elements and another set B contains 6 elements, then what is the minimum number of elements that $(A \cup B)$ can have?

(a) 3
(b) 6
(c) 8
(d) 9

Ans: (b)

Q) Consider the digits 3, 5, 7, 9. What is the number of 5-digit numbers formed by these digits in which each of these four digits appears?

(a) 240

(b) 180

(c) 120

(d) 60

0:20

Q) Consider the digits 3, 5, 7, 9. What is the number of 5-digit numbers formed by these digits in which each of these four digits appears?

(a) 240   (b) 180

(c) 120   (d) 60

Ans: (a)

Q) What is the value of the following determinant?

$$\begin{vmatrix} \cos C & \tan A & 0 \\ \sin B & 0 & -\tan A \\ 0 & \sin B & \cos C \end{vmatrix}$$

(a) -1

(b) 0

(c) $2\tan A \sin B \sin C$

(d) $-2\tan A \sin B \sin C$

0:20

Q) What is the value of the following determinant?

$$\begin{vmatrix} \cos C & \tan A & 0 \\ \sin B & 0 & -\tan A \\ 0 & \sin B & \cos C \end{vmatrix}$$

(a) -1

(b) 0

(c) $2 \tan A \sin B \sin C$

(d) $-2 \tan A \sin B \sin C$

Ans: (b)

Q) In a school, 50% students play cricket and 40% play football. If 10% of students play both the games, then what per cent of students play neither cricket nor football?

(a) 10%   (b) 15%   (c) 20%   (d) 25%

0:20

Q) In a school, 50% students play cricket and 40% play football. If 10% of students play both the games, then what per cent of students play neither cricket nor football?

(a) 10%   (b) 15%   (c) 20%   (d) 25%

Ans: (c)

Q) What is $\dfrac{2\sin^3\theta - \sin\theta}{\cos\theta - 2\cos^3\theta}$, $(0° < \theta < 90°)$

equal to

(a) $\sin\theta$ (b) $\cos\theta$

(c) $\tan\theta$ (d) $\cot\theta$

0:20

Q) What is $\dfrac{2\sin^3\theta - \sin\theta}{\cos\theta - 2\cos^3\theta}$, $(0° < \theta < 90°)$

equal to

(a) sinθ   (b) cosθ

(c) tanθ   (d) cotθ

Ans: (c)

Q) If the lines $y + px = 1$ and $y - qx = 2$ are perpendicular, then which one of the following is correct?

(a) $pq + 1 = 0$ (b) $p + q + 1 = 0$

(c) $pq - 1 = 0$ (d) $p - q + 1 = 0$

0:20

Q) If the lines $y + px = 1$ and $y - qx = 2$ are perpendicular, then which one of the following is correct?

(a) $pq + 1 = 0$

(b) $p + q + 1 = 0$

(c) $pq - 1 = 0$

(d) $p - q + 1 = 0$

Ans: (c)

Q) What is the fourth term of an AP of n terms whose sum is $n(n + 1)$?

(a) 6

(b) 8

(c) 12

(d) 20

0:20

Q) What is the fourth term of an AP of n terms whose sum is $n(n+1)$?

(a) 6

(b) 8

(c) 12

(d) 20

Ans: (b)

Q) What is the derivative of e^x with respect to x^e?

(a) $\dfrac{xe^x}{ex^e}$ (b) $\dfrac{e^x}{x^e}$ (c) $\dfrac{xe^x}{x^e}$ (d) $\dfrac{e^x}{ex^e}$

0:20

Q) What is the derivative of e^x with respect to x^e?

(a) $\dfrac{xe^x}{ex^e}$

(b) $\dfrac{e^x}{x^e}$

(c) $\dfrac{xe^x}{x^e}$

(d) $\dfrac{e^x}{ex^e}$

Ans: (a)

Q) What is the degree of the following differential equation?

$$x = \sqrt{1 + \frac{d^2 y}{dx^2}}$$

(a) 1

(b) 2

(c) 3

(d) Degree is not defined

0:20

Q) What is the degree of the following differential equation?

$$x = \sqrt{1 + \frac{d^2 y}{dx^2}}$$

(a) 1

(b) 2

(c) 3

(d) Degree is not defined

Ans: (b)

Q) If x^2, x, -8 are in AP, then which one of the following is correct?

(a) $x \in \{-2\}$

(b) $x \in \{4\}$

(c) $x \in \{-2, 4\}$

(d) $x \in \{-4, 2\}$

0:20

Q) If x^2, x, -8 are in AP, then which one of the following is correct?

(a) $x \in \{-2\}$

(b) $x \in \{4\}$

(c) $x \in \{-2, 4\}$

(d) $x \in \{-4, 2\}$

Ans: (c)

Q)What is $\displaystyle\int \frac{dx}{\sec^2(\tan^{-1} x)}$ equal to?

(a) $\sin^{-1} x + c$ (b) $\tan^{-1} x + c$

(c) $\sec^{-1} x + c$ (d) $\cos^{-1} x + c$

0:20

Q)What is $\displaystyle\int \frac{dx}{\sec^2(\tan^{-1}x)}$ equal to?

(a) $\sin^{-1}x + c$ (b) $\tan^{-1}x + c$

(c) $\sec^{-1}x + c$ (d) $\cos^{-1}x + c$

Ans: (b)

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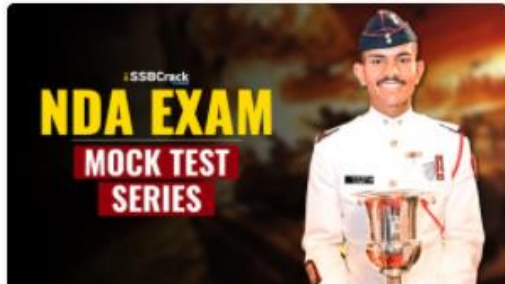### CDS Exam Online Course 2022

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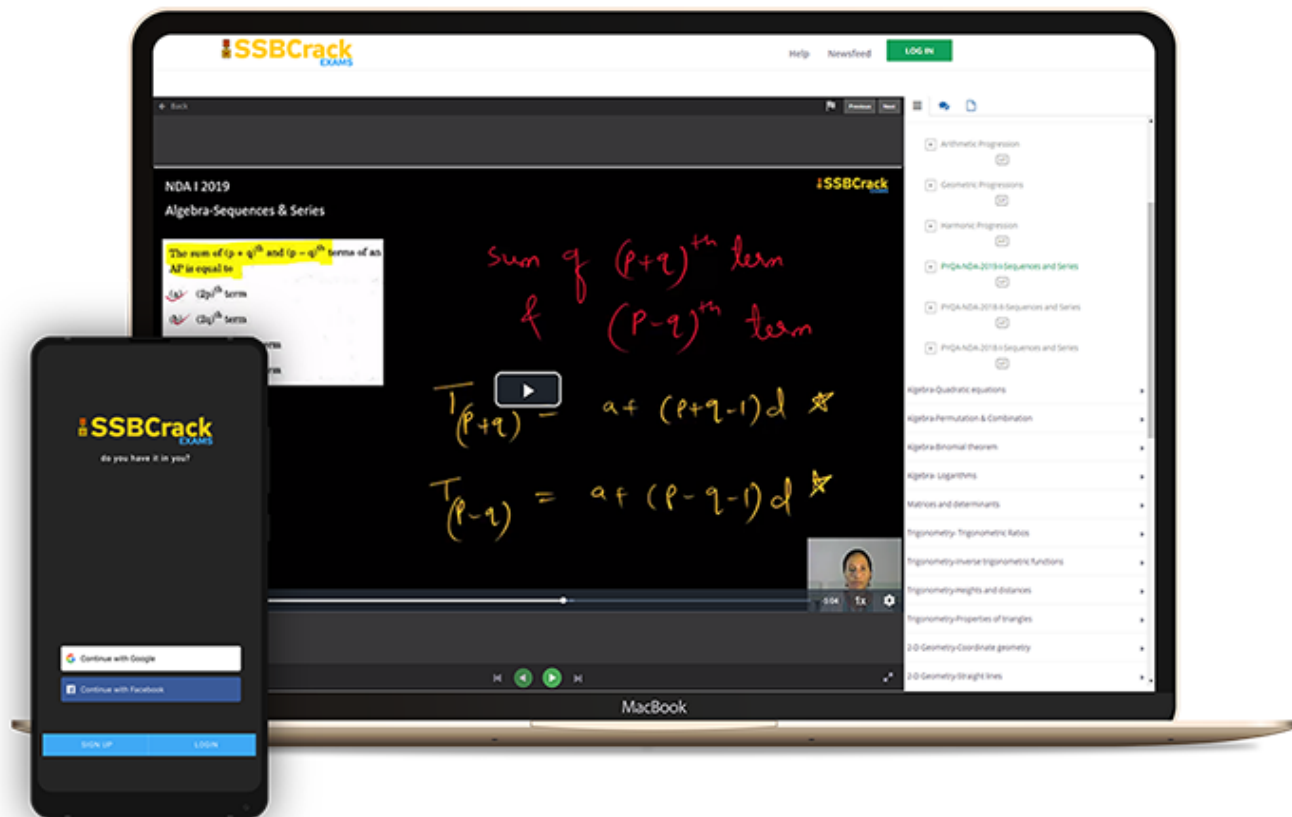
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