Trigonometric Functions JEE Mains 2021 Problem Set

4 JEE Main 2021 (Online) 24th February Morning Slot

MCQ (Single Correct Answer)

If $e^{\left(\cos^2x+\cos^4x+\cos^6x+...\infty\right)\log_e2}$ satisfies the equation t² - 9t + 8 = 0, then the value of $\frac{2\sin x}{\sin x+\sqrt{3}\cos x}\left(0< x<\frac{\pi}{2}\right)$ is :

- $\triangle \sqrt{3}$
- \bigcirc 2 $\sqrt{3}$
- $\frac{1}{2}$
- 3 JEE Main 2021 (Online) 25th February Morning Slot

MCQ (Single Correct Answer)

All possible values of $\theta \in [0, 2\pi]$ for which $\sin 2\theta$ + $\tan 2\theta$ > 0 lie in :

- $(0,\frac{\pi}{2}) \cup (\frac{\pi}{2},\frac{3\pi}{4}) \cup (\pi,\frac{7\pi}{6})$
- 2 JEE Main 2021 (Online) 25th February Evening Shift

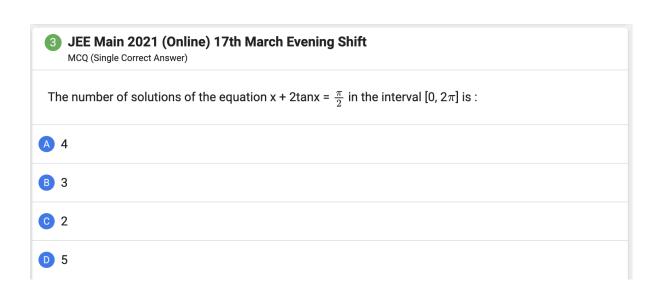
MCQ (Single Correct Answer)

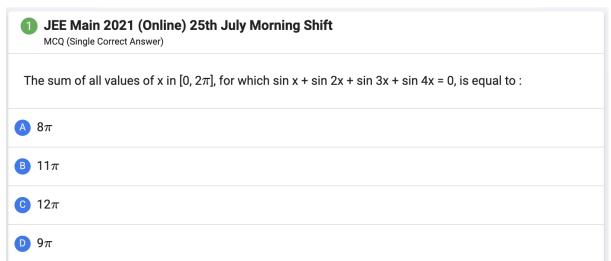
If 0 < x, $y < \pi$ and $\cos x + \cos y - \cos(x + y) = \frac{3}{2}$, then $\sin x + \cos y$ is equal to :

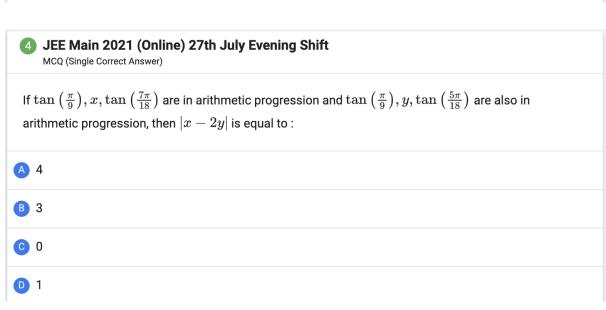
- $\frac{1+\sqrt{3}}{2}$
- $\frac{1}{2}$
- $\frac{\sqrt{3}}{2}$

O JET Main 2004 (Online) dealt March Marring Chife
1 JEE Main 2021 (Online) 16th March Morning Shift MCQ (Single Correct Answer)
The number of roots of the equation, $(81)^{\sin^2 x} + (81)^{\cos^2 x} = 30$ in the interval $[0, \pi]$ is equal to :
A 2
B 3
© 4
D 8
4 JEE Main 2021 (Online) 16th March Morning Shift









3 JEE Main 2021 (Online) 25th July Evening Shift

MCQ (Single Correct Answer)

The value of $\cot \frac{\pi}{24}$ is :

A
$$\sqrt{2} + \sqrt{3} + 2 - \sqrt{6}$$

B
$$\sqrt{2} + \sqrt{3} + 2 + \sqrt{6}$$

$$\sqrt{2} - \sqrt{3} - 2 + \sqrt{6}$$

$$0 3\sqrt{2} - \sqrt{3} - \sqrt{6}$$

2 JEE Main 2021 (Online) 27th July Morning Shift

MCQ (Single Correct Answer)

If $\sin \theta + \cos \theta = \frac{1}{2}$, then 16($\sin(2\theta) + \cos(4\theta) + \sin(6\theta)$) is equal to :

- A 23
- **B** −27
- **○** −23
- D 27

1 JEE Main 2021 (Online) 26th August Morning Shift

MCQ (Single Correct Answer)

The sum of solutions of the equation

$$rac{\cos x}{1+\sin x}=| an 2x|$$
 , $x\in\left(-rac{\pi}{2},rac{\pi}{2}
ight)-\left\{rac{\pi}{4},-rac{\pi}{4}
ight\}$ is :

- $A \frac{11\pi}{30}$
- $\frac{\pi}{10}$
- $\frac{c}{30} \frac{7\pi}{30}$
- $-\frac{\pi}{15}$

4	JEE Main 2021 (Online) 26th August Evening S	Shift
	MCO (Single Correct Answer)	

The value of

 $2\sin\left(\frac{\pi}{8}\right)\sin\left(\frac{2\pi}{8}\right)\sin\left(\frac{3\pi}{8}\right)\sin\left(\frac{5\pi}{8}\right)\sin\left(\frac{6\pi}{8}\right)\sin\left(\frac{7\pi}{8}\right)$ is :

- $\frac{1}{4\sqrt{2}}$
- $\frac{1}{8}$

3 JEE Main 2021 (Online) 27th August Morning Shift MCQ (Single Correct Answer)

The distance of the point (1, -2, 3) from the plane x - y + z = 5 measured parallel to a line, whose

- **B** 5

A 3

- **C** 2
- **D** 1

2 JEE Main 2021 (Online) 31st August Evening Shift

MCQ (Single Correct Answer)

direction ratios are 2, 3, -6 is :

The number of solutions of the equation $32^{ an^2x}+32^{\sec^2x}=81,\,0\leq x\leq rac{\pi}{4}$ is :

- A 3
- **B** 1
- **O**
- **D** 2

JEE Main 2021 (Online) 1st September Evening ShiftMCQ (Single Correct Answer)

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If n is the number of solutions of the equation

 $2\cos x\left(4\sin\left(\frac{\pi}{4}+x\right)\sin\left(\frac{\pi}{4}-x\right)-1\right)=1, x\in[0,\pi]$ and S is the sum of all these solutions, then the ordered pair (n, S) is :

- (3, 13π / 9)
- **B** $(2, 2\pi/3)$
- $(2, 8\pi / 9)$
- ① $(3, 5\pi/3)$