

JEE MAINS 2023

April 13 - Shift 1

EE24BTECH11061 - Rohith Sai

SINGLE CORRECT

- 1) For $x \in \mathbb{R}$, two real valued functions $f(x)$ and $g(x)$ are such that, $g(x) = \sqrt{x} + 1$ and $f \circ g(x) = x + 3 - \sqrt{x}$. Then $f(0)$ is equal to

| | |
|------|-------|
| a) 5 | c) -3 |
| b) 0 | d) 1 |

- 2) Let the equation of plane passing through the line of intersection of the planes $x + 2y + az = 2$ and $x - y + z = 3$ be $5x - 11y + bz = 6a - 1$. For $c \in \mathbb{Z}$, the distance of this plane from the point $(a, -c, c)$ is $\frac{2}{\sqrt{a}}$, then $\frac{a+b}{c}$ is equal to

| | |
|-------|-------|
| a) -4 | c) -2 |
| b) 2 | d) 4 |

- 3) Fractional part of the number $\frac{4^{2022}}{15}$ is equal to

| | |
|-------------------|--------------------|
| a) $\frac{4}{15}$ | c) $\frac{1}{15}$ |
| b) $\frac{8}{15}$ | d) $\frac{14}{15}$ |

- 4) Let $y = y_1(x)$ and $y = y_2(x)$ be the solution curves of the differential equation $\frac{dy}{dx} = y + 7$ with initial conditions $y_1(0) = 0$ and $y_2(0) = 1$ respectively. Then the curves $y = y_1(x)$ and $y = y_2(x)$ intersect at

| | |
|------------------------------|---------------|
| a) no point | c) one point |
| b) infinite number of points | d) two points |

- 5) The area of the region enclosed by the curve $f(x) = \max\{\sin x, \cos x\}$, $-\pi \leq x \leq \pi$ and the x-axis is

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