

JEE Main 20th July Shift - II 2021

Q16. If

$$g(t) = \begin{cases} \max(t^3 - 6t^2 + 9t - 3, 0), & t \in [0, 3] \\ 4 - t, & t \in (3, 4] \end{cases}$$

Then the number of points at which  $g(t)$  is non differentiable is

- A 1
- B 3
- C 2
- D 4

Q13. If  $x = ay - 1 = z - 2$ , and  $x = 3y - 2 = bz - 2$  lie in same plane then the value of  $a, b$ , is

- A  $a = 2, b = 3$
- B  $a = 1, b = 1$
- C  $b = 1, a \in \mathbb{R} - \{0\}$
- D  $a = 3, b = 2$

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Q11. If  $(\alpha, \beta)$  is the point on  $y^2 = 6x$ , that is closest to  $(3, \frac{3}{2})$  then find  $2(\alpha + \beta)$

A 6

B 9

C 7

D 5

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Q9. If  $\lim_{x \rightarrow 0} \frac{\alpha x e^x - \beta \ln(1+x) + \gamma x^2 e^{-x}}{x^2 \sin x} = 10$

then the value of  $\alpha + \beta + \gamma$  is

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Q8.

$$I = \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} [x] - \sin x \, dx$$

*[x]* is annotated as integer with a green arrow pointing to it.

(where  $[.]$  represents G.I.F.)

- |          |    |          |    |
|----------|----|----------|----|
| <b>A</b> | -2 | <b>C</b> | 0  |
| <b>B</b> | 1  | <b>D</b> | -1 |

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Q6. If  $f(x) = x + 1$  then find

$$\lim_{n \rightarrow \infty} \frac{1}{n} \left[ f(0) + f\left(\frac{5}{n}\right) + f\left(\frac{10}{n}\right) + \dots + f\left(\frac{5(n-1)}{n}\right) \right]$$

Limit of  
a Sum.

A  $\frac{7}{2}$

C  $\frac{5}{2}$

B  $\frac{3}{2}$

D  $\frac{1}{2}$

Q4. The value of

$$\tan \left( 2 \tan^{-1} \left( \frac{3}{5} \right) + \sin^{-1} \left( \frac{5}{13} \right) \right) \text{ is :}$$

A  $\frac{220}{21}$

B  $\frac{110}{21}$

C  $\frac{55}{21}$

D  $\frac{20}{11}$

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Q1. A: if  $2 + 4 = 7$ , then  $3 + 4 = 8$

B: if  $3 + 5 = 8$ , then earth is flat

C: if A and B are true, then  $5 + 4 = 11$

A A is true, B and C are false

B B is true, A and C are false

C C is true, A and B are false

D B is false, A and C are true



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Q3. In a  $\Delta ABC$ , if  $|\vec{AB}| = 7$ ,  $|\vec{BC}| = 5$  and  $|\vec{CA}| = 3$   
if projection of  $|\vec{BC}|$  on  $|\vec{CA}|$  is  
 $\left(\frac{n}{2}\right)$  then the value of  $n$  is :