Q16. If

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

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
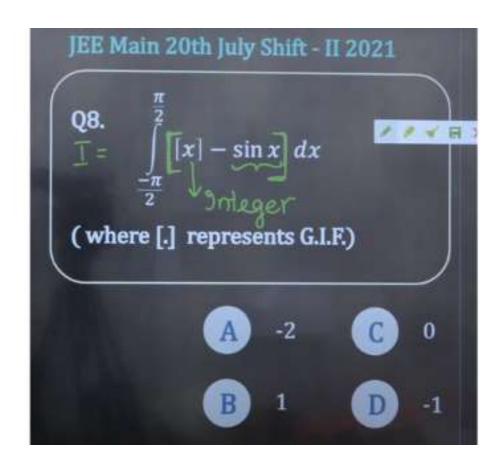
A $a = 2, b = 3$

B $a = 1, b = 1$

C $b = 1, a \in R - \{0\}$

D $a = 3, b = 2$

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

A) 6

B) 9

C) 7

D) 5

Q9. If $\lim\limits_{x \to 0} \dfrac{\alpha x e^x - \beta \ln(1+x) + \gamma x^2 e^{-x}}{x^2 \sin x} = 10$
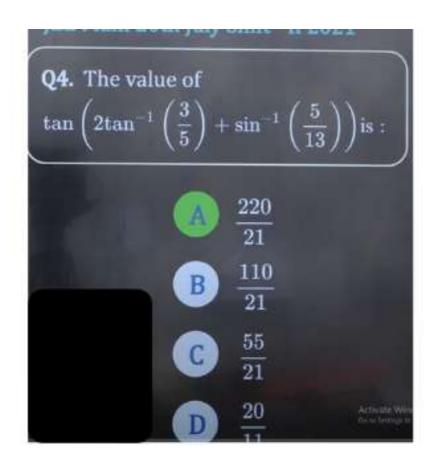
then the value of $\alpha + \beta + \gamma$ is

Q8.

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

integer

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

A   -2

C   0

B   1

D   -1

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

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

Limit of
a Sum.

A) $\dfrac{7}{2}$ C) $\dfrac{5}{2}$

B) $\dfrac{3}{2}$ D) $\dfrac{1}{2}$

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) $\dfrac{220}{21}$

B) $\dfrac{110}{21}$

C) $\dfrac{55}{21}$

D) $\dfrac{20}{11}$

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

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