

66. Let $f : [1, \infty) \rightarrow [2, \infty)$ be a differentiable function such that $f(1) = 2$. If

$$6 \int_1^x f(t) dt = 3x f(x) - x^3$$

for all $x \geq 1$, then the value of $f(2)$ is

ANSWER : MARKS TO ALL

67. If z is any complex number satisfying $|z - 3 - 2i| \leq 2$, then the minimum value of $|2z - 6 + 5i|$ is

ANSWER : 5

68. The minimum value of the sum of real numbers a^{-5} , a^{-4} , $3a^{-3}$, 1 , a^8 and a^{10} with $a > 0$ is

ANSWER : 8

69. Let $f(\theta) = \sin \left(\tan^{-1} \left(\frac{\sin \theta}{\sqrt{\cos 2\theta}} \right) \right)$, where $-\frac{\pi}{4} < \theta < \frac{\pi}{4}$. Then the value of

$$\frac{d}{d(\tan \theta)} (f(\theta))$$

is

ANSWER : 1

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