1. Consider $f(x)= e^x$ and $g(x)= 2x - 5$. Then $(gof)^{-1}$ equals:

(1) $2e^x - 5$ (2) e^{2x-5}

(3) $\frac{5+\ln x}{2}$ (4) $\ln\left(\frac{x+5}{2}\right)$

2. Let $f : A \to B$ be a function defined by $f(x)= \sqrt{3}\sin x + \cos x + 4$. If f is invertible, then

(1) $A = \left[\frac{-2\pi}{3}, \frac{\pi}{3}\right],\ B = [2, 6]$ (2) $A = \left[\frac{\pi}{6}, \frac{5\pi}{6}\right],\ B = [-2, 2]$

(3) $A = \left[\frac{-\pi}{2}, \frac{\pi}{2}\right],\ B = [2, 6]$ (4) $A = \left[\frac{-\pi}{3}, \frac{\pi}{3}\right],\ B = [2, 6]$

(5) none of these.

3. Which of the following functions is inverse of itself?

(1) $f(t)= \frac{(1-t)}{(1+t)}$ (2) $f(t)= \frac{(1-t^2)}{(1+t^2)}$

(3) $f(t)= 4^{\log t}$ (4) $f(t)= 2^t$

4. Let A be a set containing10 distinct elements, then the total number of distinct functions from A to A is

(1) 10^{10} (2) 101

(3) 2^{10} (4) $2^{10} - 1$

5. If $A = \{a, b, c\}$, then total number of one-one onto functions which can be defined from A to A is

(1) 3 (2) 4

(3) 9 (4) 6

6. Let $f : (-\infty, 1] \to (-\infty, 1]$ defined by $f(x)= x(2 - x)$, then $f^{-1}(x)=$

(1) $1 - \sqrt{1 - x}$ (2) $1 + \sqrt{1 - x}$

(3) $\frac{1}{x(2-x)}$ (4) None of these

7. Number of solution of $\log_{10} x + |x| = 0$ is

(1) 0 (2) 2

(3) 3 (4) 1

8. The number of roots of the equation $\cot x = \frac{\pi}{2} + x$ in $\left[-\pi, \frac{3\pi}{2}\right]$ is

(1) 3 (2) 2

(3) 1 (4) infinite

9. Which of the following is a function whose graph is symmetrical about the origin?

(1) $f(x)=\left(2^x + 2^{-x}\right)$ (2) $f(x)= \left[\log\left(x + \sqrt{1 + x^2}\right)\right]^2$

(3) $f(x + y)= f(x)+f(y) \forall x, y \in R$ (4) None of these

10. The number of solution of the equation $|\cos x|= x^2 + x + 2$ is