

Date Planned : __ / __ / __	Daily Tutorial Sheet – 8	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level – 2	Exact Duration: _____

- 101.** The number of real solution(s) of the equation $\sin(e^x) = 5^x + 5^{-x}$ is:
(A) 0 **(B)** 1 **(C)** 2 **(D)** Infinitely many.
- 102.** Let $2 \sin^2 x + 3 \sin x - 2 > 0$ and $x^2 - x - 2 < 0$ (x is measured in radian). Then ' x ' lies in the interval.
(A) $\left(\frac{\pi}{6}, \frac{5\pi}{6}\right)$ **(B)** $\left(-1, \frac{5\pi}{6}\right)$ **(C)** $(-1, 2)$ **(D)** $\left(\frac{\pi}{6}, 2\right)$ 
- 103.** The number of points of intersection of the two curves $y = 2 \sin x$ and $y = 5x^2 + 2x + 3$ is:
(A) 0 **(B)** 1 **(C)** 2 **(D)** ∞
- 104.** The number of all possible triplets (a_1, a_2, a_3) such that $a_1 + a_2 \cos 2x + a_3 \sin^2 x = 0$ for all x is:
(A) 0 **(B)** 1 **(C)** 3 **(D)** Infinite
- 105.** The equation $\sin^4 x - (k+2) \sin^2 x - (k+3) = 0$ possesses a solution if : 
(A) $k > -3$ **(B)** $k < -2$ **(C)** $-3 \leq k \leq -2$ **(D)** k is any (+ve) value
- *106.** The solution of equation $\sin^{50} x - \cos^{50} x = 1$ can be: ($n \in I$)
(A) $2n\pi + \frac{\pi}{2}$ **(B)** $2n\pi + \frac{\pi}{3}$ **(C)** $n\pi + \frac{\pi}{2}$ **(D)** $n\pi + \frac{\pi}{3}$
- 107.** If $\frac{\sin^3 \theta - \cos^3 \theta}{\sin \theta - \cos \theta} - \frac{\cos \theta}{\sqrt{1 + \cot^2 \theta}} - 2 \tan \theta \cdot \cot \theta = -1$ where $\theta \in [0, 2\pi]$ then: 
(A) $\theta \in \left(0, \frac{\pi}{2}\right) - \left\{\frac{\pi}{4}\right\}$ **(B)** $\theta \in \left(\frac{\pi}{2}, \pi\right) - \left\{\frac{3\pi}{4}\right\}$
(C) $\theta \in \left(\pi, \frac{3\pi}{2}\right) - \left\{\frac{5\pi}{4}\right\}$ **(D)** $\theta \in (0, \pi) - \left\{\frac{\pi}{4}, \frac{\pi}{2}\right\}$
- 108.** In interval $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$, the equation $\log_{\sin \theta} (\cos 2\theta) = 2$ has:
(A) no solution **(B)** a unique solution
(C) two solution **(D)** infinitely many solution
- *109.** If $\frac{\tan x}{1} = \frac{\tan y}{2} = \frac{\tan z}{3}$; ($\neq 0$) and $x + y + z = \pi$ then: 
(A) maximum value of $\tan x + \tan y + \tan z$ is 6
(B) minimum value of $\tan x + \tan y + \tan z$ is -6
(C) $\tan x + \tan y + \tan z = 0 \quad \forall \quad x, y, z \in R$
(D) None of these
- 110.** If $F(x) = \sin x + \cos x$, then the most general solution of $F(x) = \left[F\left(\frac{\pi}{10}\right)\right]$ are: (where $[x]$ is the greatest integer less than or equal to ' x ') 
(A) $2n\pi + \frac{\pi}{2}, n \in I$ **(B)** $n\pi, n \in I$ **(C)** $2n\pi + \frac{2\pi}{3}, n \in I$ **(D)** $2n\pi, 2n\pi + \frac{\pi}{2}, n \in I$