

Date Planned : __ / __ / __	Daily Tutorial Sheet – 6	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level – 1	Exact Duration: _____

76. If $\cos \theta = \frac{1}{2} \left(x + \frac{1}{x} \right)$, then $\frac{1}{2} \left(x^2 + \frac{1}{x^2} \right)$ is equal to:
 (A) $\sin 2\theta$ (B) $\cos 2\theta$ (C) $\tan 2\theta$ (D) $\sec 2\theta$
77. If $\tan x = \frac{b}{a}$, then $\sqrt{\frac{a+b}{a-b}} + \sqrt{\frac{a-b}{a+b}}$ is equal to :
 (A) $\frac{2 |\sin x|}{\sqrt{\sin 2x}}$ (B) $\frac{2 |\cos x|}{\sqrt{\cos 2x}}$ (C) $\frac{2 |\cos x|}{\sqrt{\sin 2x}}$ (D) $\frac{2 |\sin x|}{\sqrt{\cos 2x}}$
78. $\tan \frac{2\pi}{5} - \tan \frac{\pi}{15} - \sqrt{3} \tan \frac{2\pi}{5} \tan \frac{\pi}{15}$ is equal to :
 (A) $-\sqrt{3}$ (B) $\frac{1}{\sqrt{3}}$ (C) 1 (D) $\sqrt{3}$
79. If $\sin(\alpha + \beta) = 1$, $\sin(\alpha - \beta) = \frac{1}{2}$, then $\tan(\alpha + 2\beta) \tan(2\alpha + \beta)$ is equal to :
 (A) 1 (B) -1 (C) Zero (D) None of these
80. If α is a root of $25 \cos^2 \theta + 5 \cos \theta - 12 = 0$, $\frac{\pi}{2} < \alpha < \pi$, then $\sin 2\alpha$ is equal to :
 (A) $\frac{24}{25}$ (B) $-\frac{24}{25}$ (C) $\frac{13}{18}$ (D) $-\frac{13}{18}$
81. If $\sin(\theta - x) = a$, $\cos(\theta - y) = b$, then $\cos(x - y)$ may be equal to : ▶
 (A) $a\sqrt{(1-b^2)} + b\sqrt{(1-a^2)}$ (B) ab
 (C) $a\sqrt{(1-b^2)} - b\sqrt{(1-a^2)}$ (D) $2ab$
82. If $\sin x + \cos y = a$ and $\cos x + \sin y = b$, then $\tan \frac{x-y}{2}$ is equal to : ▶
 (A) $a + b$ (B) $a - b$ (C) $\frac{a+b}{a-b}$ (D) $\frac{a-b}{a+b}$
83. If $\sin \theta + \operatorname{cosec} \theta = 2$ then the value of $\sin^8 \theta + \operatorname{cosec}^8 \theta$ is equal to:
 (A) 2 (B) 2^8 (C) 2^4 (D) None of these
84. If $x = y \cos \frac{2\pi}{3} = z \cos \frac{4\pi}{3}$, then $\frac{xy + yz + zx}{(x + y + z)^2}$ is equal to:
 (A) -1 (B) 0 (C) 1 (D) 2

- 85.** If $\sin \theta + \sin^2 \theta = 1$, then $\cos^2 \theta + \cos^4 \theta$ is equal to :
- (A) $\frac{1}{4}$ (B) $\frac{1}{2}$ (C) 1 (D) None of these
- 86.** If the expression $\cos\left(x - \frac{3\pi}{2}\right) + \sin\left(\frac{3\pi}{2} + x\right) + \sin(32\pi + x) - 18\cos(19\pi - x) + \cos(56\pi + x) - 9\sin(x + 17\pi)$ is expressed in the form of $a \sin x + b \cos x$, then $(a + b)$ is equal to :
- (A) 17 (B) 27 (C) 13 (D) 23
- 87.** $\cos(2001)\pi + \cot(2001)\frac{\pi}{2} + \sec(2001)\frac{\pi}{3} + \tan(2001)\frac{\pi}{4} + \operatorname{cosec}(2001)\frac{\pi}{6}$ equals to :
- (A) 0 (B) 1 (C) -2 (D) Not defined
- 88.** The product $\cot 123^\circ \cdot \cot 133^\circ \cdot \cot 137^\circ \cdot \cot 147^\circ$, when simplified is equal to:
- (A) -1 (B) $\tan 37^\circ$ (C) $\cot 33^\circ$ (D) 1
- *89.** If $\sec A = \frac{17}{8}$ and $\operatorname{cosec} B = \frac{5}{4}$, then $\sec(A + B)$ can have the value equal to :
- (A) $\frac{85}{36}$ (B) $-\frac{85}{36}$ (C) $-\frac{85}{84}$ (D) $\frac{85}{84}$
- 90.** If $2 \tan \frac{\alpha}{2} = \tan \frac{\beta}{2}$, then $\frac{3 + 5 \cos \beta}{5 + 3 \cos \beta}$ is equal to:
- (A) $\cos \alpha$ (B) $\cos \beta$ (C) $\sin \alpha$ (D) $\sin \beta$