# Worksheet for Functions

## Evaluate:

1. If $f(x) = (a - x^x)^{\frac{1}{x}}$ a > 0, x ∈ N, then show that f [f(x)] = x.

2. $a f(x) + b f\left(\frac{1}{x}\right) = \left(\frac{1}{x} - 5\right)$, then find f (x). $\left[\text{Ans.} \Rightarrow \frac{1}{a^2 - b^2}\left(\frac{a}{x} - bx\right) - \frac{5}{a+b}\right]$

3. Find domain and Range if $f(x) = \frac{1}{2 - \cos 3x}$. $\left[\text{Ans.} \Rightarrow \text{R and } \left(\frac{1}{3}, 1\right)\right]$

4. Find domain, if $f(x) = \frac{1}{\log_{10}(1-x)} + \sqrt{x+2}$. $\left[\text{Ans.} \Rightarrow (-2, 0) \cup (0, 1)\right]$

5. Check if there functions are even or odd:

   (i) $f(x) = \log\left(x + \sqrt{x^2 + 1}\right)$ (ii) $f(x) = x^2 - |x|$

   (iii) $f(x) = \sin x + \cos x$ (iv) $f(x) = \left[\frac{a^x - 1}{a^x + 1}\right] \cdot x$

6. $f(x) = \sin^2 x + \sin^2\left(x + \frac{\pi}{3}\right) + \cos x \cdot \cos\left(x + \frac{\pi}{3}\right)$ and $g\left(\frac{5}{4}\right) = 1$, find gof (x).

   [Ans. ⇒ 1]