SUBJECT – MATHEMATICS , CLASS-XII(HOTS)
CHAPTER-INCREASING & DECREASING

1- Show that the function f(x)=2x+$\cot^{-1}$x+log($\sqrt{1+x^2}$ - x) is increasing on R

2- Prove that yhe function f(x)=tanx-4x is strictly decreasing on (-$\frac{\pi}{3}, \frac{\pi}{3}$)

3- Prove that f(x)= $\frac{4sinx}{2+cosx} - x$ is an increasing function of x in (0, $\frac{\pi}{2}$)

4- Find the interval in which f(x)= $\frac{x}{logx}$ is increasing or decreasing

5- Find the interval f(x) = $\begin{vmatrix} x+a^2 & ab & ac \\ ab & x+b^2 & bc \\ ac & bc & x+c^2 \end{vmatrix}$ is increasing or decreasing where a,b,c are any real number.

6- Prove that sin(tanx)>x, for all x ϵ (0, $\frac{\pi}{2}$)

7- If f(x)=x^3+bx^2+cx+d prove that f(x) is increasing for all real x if $0<b^2<c$

8- Show that 2sinx+2tanx≥3x, where 0≤x≤$\frac{\pi}{2}$.

9- Show that 1+xlog(x+$\sqrt{1+x^2}$≥$\sqrt{1+x^2}$,for all x≥0

10- Given that A={x: $\frac{\pi}{6} \leq x \leq \frac{\pi}{3}$}and f(x)=cosx-x(1+x), find f(A)