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

1. The function $f(x) = \tan x - x$
   a. Always increase
   b. always decrease
   c. Never decrease
   d. Sometimes increase and sometimes decrease
2. The function $f(x)$ defined by $f(x) = (x+2)e^{-x}$ is
   a. Strictly decreasing for all real x
   b. Strictly decreasing in $(-\infty, -1)$ and strictly increasing in $(-1, -\infty)$
   c. Strictly increasing for all real x
   d. Strictly decreasing in $(-1, \infty)$ and strictly increasing in $(-\infty, -1)$

3- The function $f(x) = \frac{1}{x}$ in its domain is
   a. Strictly decreasing
   b. Strictly increasing
   c. Constant
   d. Information insufficient

4- $2x^3 - 6x + 5$ is a strictly increasing function if
   a. $0 < x < 1$ b. $-1 < x < 1$ c. $x < -1 \; or \; x > 1$ d. $-1 < x < -\frac{1}{2}$
5. The function $f(x) = x + \cos x$ is
   a. Always increasing
   b. Always decreasing
   c. Increasing for certain range of x
   d. None of these
6. The function $f(x) = 1 - x^3 - x^5$ is decreasing for :
   a. $1 \leq x \leq 5$ b. $x \leq 1$ c. $x \geq 1$ d. all values of x
7. For what values of x, the function $x^3 + 3x^2 + 3x + 7$ is increasing
   a. $For \; all \; real \; x$ b. $for \; x < 0$ c. $for \; x > 0$ d. $For \; x = 0 \; only.$
8. The function $f(x) = \frac{x}{1+|x|}$ is
   a. Strictly increasing
   b. strictly decreasing
   c. Neither increasing nor decreasing
   d. Not differentiable at $x = 0$
9. The function $f(x) = \log(1+x) - \frac{2x}{2+x}$ is increasing on
   a. $(-1, \infty)$ b. $(-\infty, 1)$ c. $(-\infty, \infty)$ d. None of these
10. If the function $f(x) = x^2 - kx + 5$ is increasing on [2, 4]; then
    a. $k \in [2, \infty)$ b. $k \in (-\infty, 2]$ c. $k \in [4, \infty)$ d. $k \in (-\infty, 4]$
11. Show that f(x) =x^2 is decreasing in (-∞,0).
12. Show that the function f(x)=-3x+12 is decreasing in R.
13. Show that f(x) =2^x ,is strictly increasing in R
14. Find the interval in which f(x)= -x^2-2x+15 is decreasing.
15. Find the intervals where f(x)=2x^3-9x^2+12x+15 is increasing
16. Find the interval where f(x)=(x+1)^3(x-3)^3 is decreasing.
17. Find the intervals in which the function f(x)=x^4 - $\frac{x^3}{3}$ is increasing
18. Find the interval where f(x) = $\frac{4x^2+1}{x}$ is decreasing.
19. Find the interval for which f(x)= $\frac{x-2}{x+1}$ is increasing.

20. Show that f(x) = log(x) is increasing in its domain.
21. Show that $f(x) = x^3$ is increasing for all x
22. Show that $f(x)=ax^3$,is increasing when $a>0$ and decreasing when $a<0$.
23. Find the interval where f(x) =logx is increasing.
24. Find the interval where $f(x)=a^x$ is increasing when $0<a<1$.
25. Find the interval for which $f(x)=x^2 – 7x + 6$ is decreasing.
26. Find the interval for which $f(x)= x^3+8$ is increasing.
27. Find the interval for which f(x)= tanx is increasing when $x\epsilon(0,2\square)$.
28. Find the interval for which f(x)= sinx is increasing when $x\epsilon(0,2\square)$.
29. Find the interval for which f(x)= cosx is increasing when $x\epsilon(0,2\square)$.
30. Find the interval for which $f(x)= \sin^{-1}x$ is increasing when $x\epsilon(-1,1)$.