THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Solve the following: (6x5=30)

(i)	Using the concept of shifting and scaling of functions, draw the graph of $y = (x+1)^2 - 1$	(5)
(ii)	Find the limit of : $\lim\limits_{x \to 5} \left(\dfrac{x-5}{x^2-25} \right)$.	(5)
(iii)	Find the values of x for which f(x) is continuous $f(x) = \dfrac{x^2+x-6}{x^2-4}$.	(5)
(iv)	Find derivative of f(x) if $f(x) = \ln(2x) + 1$.	(5)
(v)	Solve the inequality: $|2 - 3x| > 5$.	(5)
(vi)	Evaluate the Integral $\int \left(\dfrac{x^9}{2} + \dfrac{2}{\sqrt{x}} \right) dx$.	(5)

Solve the following: (5x6=30)

Q.2	Find derivative w.r.t 'x' of $\ln \sqrt{\tan^{-1} 2x}$.	(6)
Q.3	Solve the integral $\int \sin(2 + x^3) x^5 dx$.	(6)
Q.4	If $y = \tan^{-1} x$, show that $(1 + x^2)y'' + 2xy' = 0$. Hence find the value of $y^{(n)}(x)$.	(6)
Q.5	Find the limit by using L'Hopital's rule: $\lim\limits_{t \to 0} \left(\dfrac{1 - \cos t}{t^2} \right)$.	(6)
Q.6	Using intermediate value theorem, show that the equation $x^3 + 3x + 1 = 0$, has exactly one real solution.	(6)