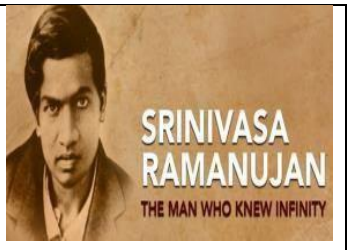
SRM INSTITUTE OF SCIENCE & TECHNOLOGY (Deemed to be University u/s 3 of UGC Act, 1956)	**SRM Institute of Science and Technology** **Kattankulathur** **DEPARTMENT OF MEATHEMATICS** **18MAB302T DISCRETE MATHEMATICS** **UNIT–1 SET THEORY** **Tutorial Sheet - 2**	

Sl.No.	Questions PART-A (3 Marks)
1	Let f : R → R be defined by f(x) = 2x – 3 and find a formula for its inverse function
2	Let A={a, b, c} B={x, y, z} and C={r, s, t}. Let f: A → B and g:B → C be defined by f={(a,y), (b,x), (c,y)} and g={(x,s), (y, t), (z,r)}. Find a) composition function g ° f: A→C b) Im(f), Im(g) and Im(g ° f)
3	Determine whether the function f : R → R given by f(x) = (x+1) / x is one-to one or not.
4	Show that the function f : R → R defined by $f(x) = x^2$ is not bijective.
5	Let f : R → R and g : R → R be defined by f(x) = 2x +1 $g(x) = x^2-1$ then find The formula for the composition function (g ° f)(x).
	PART – B (6 Marks)
6	For the relation R={(1,1),(1,2),(1,3),(2,1),(2,2),(2,3),(3,1),(3,3),(4,4)} defined on X={1,2,3,4},find the transitive closure of R using Warshall's algorithm.
7	For the relation R={(1,3),(1,4),(2,1),(2,3),(2,4),(3,4)} defined on X={1,2,3,4}find the properties of the relation R.
8	Find (f ◦ g)(x) for f(x) = 3x + 4 and $g(x) = (x^2 + 1)/ x$
9	At the end of the semester a teacher assigns letter grades to each of her students. Is this a function? If so, what sets make up the domain and codomain, and is the function injective, surjective, bijective, or neither.
10	Let f : X → Y and g : Y → Z be functions. We can define the composition of f and g to be the function g ◦ f : X → Z which the image of each x ∈ X is g(f (x)). (a) If f and g are both injective, must g ◦ f be injective? Explain. (b) If f and g are both surjective, must g ◦ f be surjective? Explain.