Assignment No. 1
Calculus and Analytic Geometry

Name: Id: Program:
Last date to submit 7th April 2022
Max. Marks: 7

Q.No.1 List the following sets in descriptive form
a. A= {n ∈ Z^+ | n is a factor of 6}
b. B= {n ∈ Z | n is a factor of 6}

Q.No.2 List the following sets in tabular form
a. Last four letters of English language
b. Negative integer whose square root is a real number

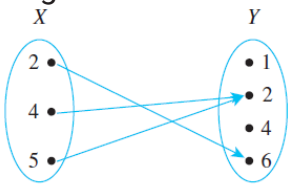
Q.No.3 List the following sets in set builder form
a. Positive integers between 10 and 20
b. Negative integers whose squares are less than and equal to 25

Q.No.4 Let A = {w, x, y, z} and B = {a, b}. Use the set-roster notation to write each of the following sets, and indicate the cardinal number of each set:
a. A × B
b. B × A
c. are answers of part(a) and b same? (yes or No)

Q.No.5 Let A and B are the sets, defined by A = {1, 2, 3} and B = {1, 3, 5}, and relation M is defined by M = {(1, 1), (1, 3), (2, 5), (2, 1), (3, 3)} from A to B. Answer the following questions
a. Draw the ray diagram of M, from A to B
b. Is M a function? (Yes, No)
b. in either case write a reason

Q.No.6 Let A and B are the sets, defined by A = {1, 2, 3} and B = {1, 3, 5} and define a relations R = {(1, 1), (2, 1), (3, 3)} from A to B. Answer the following questions
a. is R a function? (yes, No)
b. in either case, draw the ray diagram of R, from A to B
c. Write the domain, range and codomain of R

Q.No.7 Let X= {2,4,5} and Y = {1,2,4,6}. Define a function F: X → Y by the following arrow diagram:



a. Write the domain, Range and co-domain of F.
b. Find F(−1), F(0), and F(1).

Q.No.8 Find inverse of the following functions
a. f(x) = 10/(2x-5), this function is not defined for x =5/2
b. g(x) = 5/(x+9), this function is not defined for x=-9
c. k(x) = x/(2x-5), this function is not defined for x=5/2

Q.No.9 Find the values of x where the following functions are undefined
a. f(x) = 2/(2-x)
b. g(x) = (x-2)/(-3x+1)
c. k(x) = (x-3)/(x^2+5x+6)

Q.No.10 Find the natural domain for the following functions
a. $f(z) = -2z^2 + 12z + 5$
b. $f(t) = 2 - \sqrt{z^2+1}$

Q.No.11 Let a quadratic function f(x)=x^2+3x-4. This function is defined for all real values of x. Find
a. The vertex of f(x)
b. The minimum value of f(x)
c. The equation of line of symmetry
d. The range of f(x)
e. The values of x where f(x)=0
f. The domain of f(x)

Q.No.12 Let f(x)=2x^2+1 and g(x) = 2x-1 are functions. Find the following composition functions.
a. fog(x)
b. gof(x)