Worksheet-2
Course Name: Math-III (Section-A)
Total marks = 20
Date: 14/09/2022

1. Find the limits (if exists) of the following functions:.   (2+2+2+2)

    (a) $\lim_{(x,y)\to(\pi/2,0)} \frac{\cos y+1}{y-\sin x}$

    (b) $\lim_{(x,y)\to(0,0)} \frac{e^y \sin x}{x}$

    (c) $\lim_{(x,y,z)\to(1,-1,-1)} \frac{2xy+yz}{x^2+z^2}$

    (d) $\lim_{(x,y)\to(4,3)} \frac{\sqrt{x}-\sqrt{y+1}}{x-y-1}$; $x \neq y+1$

2. If $f(x_0, y_0) = 3$, what can you say about $\lim_{(x,y)\to(x_0,y_0)} f(x,y)$ if f is continuous at (x_0, y_0)?
   If f is not continuous at (x_0, y_0)? Give reasons for your answer.   (4)

3. At what point (x,y) in the plane is the function $f(x,y) = \frac{x^2+y^2}{x^2-3x+2}$ continuous ?   (4)

4. Show that the function $f(x,y) = \frac{xy}{|xy|}$ have no limits as $(x,y) \to (0,0)$.   (4)