AI1110 Assignment 2

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***Abstract*—This document contains the solution for Assignment 2 (ICSE Class 12 Maths 2019 Q.1(v))**

Question 1(v): $f(x) = \frac{x^2-9}{x-3}$ is not defined at the value $x = 3$.what value should be assigned to$f(x)$ for continuity of $f(x)$ at $x = 3$?

Solution: Given function i.e. $f(x) = \frac{x^2-9}{x-3}$ is clearly undefined at $x = 3$.

* for any function $f(x)$ to be continuous at x the limit should exist at that point.

By applying limits to $f(x)$ at $x = 3$ we get,

$$\lim_{x\to3} f(x) = \lim_{x\to3} \left(\frac{x^2-9}{x-3}\right) \tag{1}$$

$$\lim_{x\to3} f(x) = \lim_{x\to3} \left(\frac{(x-3)(x+3)}{(x-3)}\right) \tag{2}$$

$$\lim_{x\to3} f(x) = \lim_{x\to3} (x+3) \tag{3}$$

$$\lim_{x\to3} f(x) = 3+3 \tag{4}$$

$$\lim_{x\to3} f(x) = 6 \tag{5}$$

limit exists for $f(x)$ at $x = 3$ and equals to 6.
so $f(x)$ is continuous at $x = 3$ and value to be assigned is 6 for $f(x)$.