Qu.1 If $f(x) = \begin{cases} \frac{x^2-1}{x-1} & , x \neq 1 \\ 2 & , x = 1 \end{cases}$, show that $f(x)$ is continuous at $x=1$.

Qu.2 If $f(x) = \begin{cases} \frac{x}{\sin 3x} & , x \neq 0 \\ 3 & , x = 0 \end{cases}$, find whether $f(x)$ is continuous at $x=0$.

Qu.3 Discuss the continuity at $x=0$ for the function

$$f(x) = \begin{cases} \frac{1-\cos x}{x^2} & , x \neq 0 \\ \frac{1}{2} & , x = 0 \end{cases}$$

Qu.4 Test for continuity of the function at $x=a$

$$f(x) = \begin{cases} (x-a)\sin\frac{1}{x-a} & , x \neq a \\ 0 & , x = a \end{cases}$$

Qu.5 Discuss the continuity of the function $f(x)$ at $x=1$,

$$f(x) = \begin{cases} \frac{3}{2} - x & , \frac{1}{2} \leq x < 1 \\ \frac{3}{2} & , x = 1 \\ \frac{3}{2} + x & , 1 < x \leq 2 \end{cases}$$

Qu.6 For what value of a is the function $f(x) = \begin{cases} a(x^2-2x) & , x \leq 0 \\ 4x+1 & , x > 0 \end{cases}$ continuous at $x=0$ and $x=1$.?

Qu.7 For what value of K, the function $f(x) = \begin{cases} 2x+1 & , x < 2 \\ K & , x = 2 \\ 3x-1 & , x > 2 \end{cases}$

Qu.8 Find the relationship between a and b so that the function continuous at $x=3$, $f(x) = \begin{cases} ax+1 & , x \leq 3 \\ bx+3 & , x > 3 \end{cases}$

Qu.9 If the function $f(x) = \begin{cases} 3ax+b & , x > 1 \\ 11 & , x = 1 \\ 5ax-2b & , x < 1 \end{cases}$ is continuous at $x=1$, find the values of a and b.

Qu.10 If $f(x) = \begin{cases} \frac{|x-2|}{2-x} & , x \neq 2 \\ -1 & , x = 2 \end{cases}$, find whether or not, f is continuous at $x=2$

Qu.11 $f(x) = \begin{cases} \frac{x-|x|}{x} & , x \neq 0 \\ 2 & , x = 0 \end{cases}$ check continuity at $x=0$

Qu.12 If $f(x) = \begin{cases} \frac{x-5}{|x-5|} + a & , x < 5 \\ a+b & , x = 5 \\ \frac{x-5}{|x-5|} + b & , x > 5 \end{cases}$ is cts at $x=5$. Find a & b.

Qu.13. $f(x) = \begin{cases} \frac{1-\cos 4x}{x^2} & , x < 0 \\ a & , x = 0 \\ \frac{\sqrt{x}}{\sqrt{16+\sqrt{x}} - 4} & , x > 0 \end{cases}$ is cts at $x=0$. Find a?

Qu.14 A function $f(x) = [1-x] + [x-1]$. Discuss its continuity at $x=1$. $[\ ]$ → greatest integer, f.n

Qu.15. $f(x) = \begin{cases} \frac{\sin(a+1)x + \sin x}{x} & , x < 0 \\ c & , x = 0 \\ \frac{\sqrt{x+bx^2} - \sqrt{x}}{bx^{3/2}} & , x > 0 \end{cases}$

$f(x)$ is continuous at $x=0$. Find a, b, c.

Qu.16 Locate the point of discontinuity (if any) for the function

$$f(x) = \begin{cases} x^3 - x^2 + 2x - 2 & , x \neq 1 \\ 4 & , x = 1 \end{cases}$$

Qu.17. Find all the points of discontinuity of the function

$$f(x) = \begin{cases} x+2 & ; x<1 \\ 0 & ; x=1 \\ x-2 & ; x>1 \end{cases}$$

Qu.18 Determine m if $h(x)$ is continuous.

$$h(x) = \begin{cases} m(x^2-2x) & ; x<0 \\ \cos x & ; x \geq 0 \end{cases}$$

Qu.19 Show that the function $f(x) = \begin{cases} |x| & ; x \leq 2 \\ [x] & ; x > 2 \end{cases}$ is continuous on $[0,2]$.

Qu.20 Show that the $f(x) = |1-x+|x||$, is continuous, where x is real number.