National Institute of Open Schooling (NIOS)
Senior Secondary Course
Lesson –25:
Worksheet – Limits and Continuity

1. Limit of a function is approaches to a value. Justify with an example.

2. Evaluate $\lim_{x\to 0} f(x)$ and $\lim_{x\to 1} f(x)$,

Where $f(x)=\begin{cases}2x+3, & x\le 0\\ 3(x+1), & x>0\end{cases}$

3. Find $\lim_{x\to 0} f(x)$, where $f(x)=\begin{cases}\dfrac{x}{|x|}, & x\neq 0\\ 0, & x=0\end{cases}$

4. When $x=5$, evaluate

$$\lim_{x\to 5}\frac{3-\sqrt{5+x}}{5-\sqrt{5-x}}$$

5. Differentiate between the value of a function at a point and the limit at a point with an example.

6. If '*f*' is an even function, then prove that $\lim_{x\to 0^-} f(x)=\lim_{x\to 0^+} f(x)$

7. Evaluate $\lim_{x\to 0}\dfrac{e^{7x}-1}{x}$

8. If $\lim_{x\to 2}\dfrac{x^n-2^n}{x-2}=80$ and $n\in N$, then find the value of n.

9. Examine the continuity of

$$f(x)=\begin{cases}\dfrac{|x-a|}{x-a}, & x\neq a \text{ at } x=a\\ 1, & x=a\end{cases}$$

10 Determine the points of discontinuity, of the function

$$\frac{x^2+5}{x^2+x+2}$$