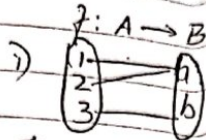


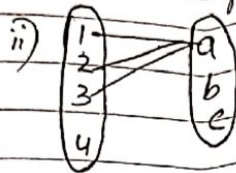
Calculus:

Function(f): is a rule which associates every element of set A to a unique element of set B .

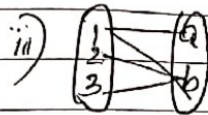
Ex



\therefore It is a function.



\therefore It is not a function because 4 does not have an image.



\therefore It is not a function as 1 does not have a unique image.

iv) $f(x) = 2x + 3$ is a function on Natural nos.

v) $x = f(p)$ is a demand function, where $x \rightarrow$ quantity
 $p \rightarrow$ price

Limit of a function:

$f(x)$ is said to have a limit as $x \rightarrow a$ if $\lim_{x \rightarrow a^+} f(x) = f(a) = \lim_{x \rightarrow a^-} f(x)$

Properties of limits

$$\bullet \lim_{x \rightarrow a} (f(x) \pm g(x)) = \lim_{x \rightarrow a} f(x) \pm \lim_{x \rightarrow a} g(x)$$

$$\bullet \lim_{x \rightarrow a} (f(x) \cdot g(x)) = \lim_{x \rightarrow a} f(x) \cdot \lim_{x \rightarrow a} g(x)$$

$$\bullet \lim_{x \rightarrow a} \left[\frac{f(x)}{g(x)} \right] = \frac{\lim_{x \rightarrow a} f(x)}{\lim_{x \rightarrow a} g(x)}$$