

function	Interval of Continuity
(i) Constant function	$x \in \mathbb{R}$
(ii) Polynomial	$x \in \mathbb{R}$
(iii) $x^{1/3}, a^x, e^x$	$x \in \mathbb{R}$
(iv) $ x $	$x \in \mathbb{R}$
(v) $\sin x, \cos x$	$x \in \mathbb{R}$
(vi) \sqrt{x}	$[0, \infty)$

- (vii) $\tan^{-1}x, \cot^{-1}x$
- (viii) $\sin^{-1}x, \cos^{-1}x$
- (ix) $\sec^{-1}x, \operatorname{cosec}^{-1}x$
- (x) $\tanh^{-1}x, \operatorname{sech}^{-1}x$
- (xi) $\cot^{-1}x, \operatorname{cosec}^{-1}x$
- (xii) $\log_a x$
- (xiii) $\operatorname{sgn}(x)$
- (xiv) $[x], \{x\}$
- (xv) Rational function

$$f(x) = \frac{\text{polynomial}}{\text{polynomial}}$$

$x \in \mathbb{R}$

$[-1, 1]$

$(-\infty, -1] \cup [0, \infty)$

$\mathbb{R} - \{x : \cos x = 0\}$

$\mathbb{R} - \{x : \sin x = 0\}$

$(0, \infty)$

$\mathbb{R} - \{0\}$ (i.e. discontinuous at $x=0$)

Non-integer (i.e. discontinuous at integer)

$\mathbb{R} - \{x = D^{\sigma} = 0\}$