

Source: [KBhMATH401Limits](#)

## 1 | Types of Discontinuity

### Infinite Discontinuity (vertical asymptote)

**Double Sided Limit:** does not exist **Function:** not defined

$$f(x) = \frac{x^2+2}{x^2-4} \text{ where } x = 2$$

### Jump Discontinuity (gap)

**Double Sided Limit:** does not exist **Function:** defined

“a ceiling function”  $f(x) = \lceil x \rceil$  where  $x = 3$

### Point Discontinuity (hole)

**Double Sided Limit:** exists **Function:** not defined

$$f(x) = \frac{x^6-1}{x^{10}-1} \text{ where } x = 1$$