Piecewise Functions

A piecewise function is a function that is defined by different expressions depending on the input value (x). Instead of having one rule for all x-values, piecewise functions use multiple rules for different intervals. They are useful for modeling real-life situations where a function behaves differently under certain conditions.

General Form

A piecewise function is written as:

$$f(x) = \{ rule1, if\ condition1$$
$$rule2, if\ condition2$$
$$\ldots \}$$

Examples

1. Linear Piecewise Function:

$$f(x) = \{ x + 2, \quad if\ x < 0$$
$$2x - 1, \quad if\ x \geq 0 \}$$

2. Mixed Piecewise Function (Linear & Quadratic):

$$f(x) = \{ x^2, if\ x < 1$$
$$3x - 2, if\ x \geq 1 \}$$

Graphs

Below are the graphs of the examples above: