

Limits of Piecewise Functions

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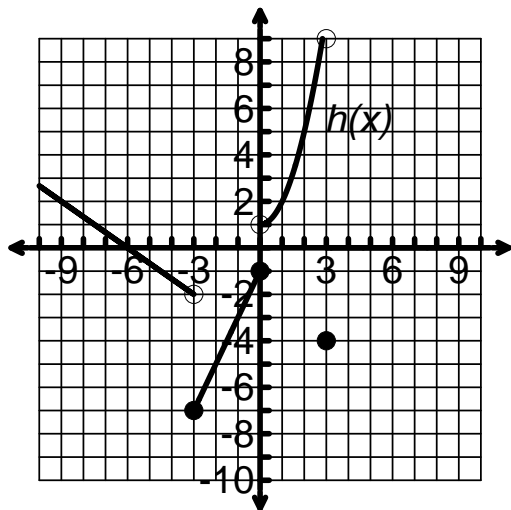
A **piecewise function** has different rules for different parts of its domain. We call these parts, the **pieces** of the piecewise function.

The bracket notation for a piecewise function is:

$$v(t) := \begin{cases} 4t & \\ 5 & -5 \leq t \leq -1 \\ -t^2 & -1 < t \leq 3 \end{cases}$$

The limit definition applies to any piecewise function both graphically & algebraically.

**1. a) Write the piecewise function for the graph of $h(x)$ below.



b) Find $\lim_{x \rightarrow -3} (h(x))$

c) Find $\lim_{x \rightarrow -\infty} (h(x))$

d) Find $h(3)$

e) Find $\lim_{x \rightarrow -4} (h(x))$

f) Find $\lim_{x \rightarrow 2} (h(x))$

**2. If $f(x) := \begin{cases} \ln(x) & 0 < x \leq 2 \\ x^2 \ln(2) & 2 < x \leq 4 \end{cases}$ then $\lim_{x \rightarrow 2} f(x)$ is _____.