AP Calculus
Unit 1 - Limits
1.3 - Piecewise Defined Functions

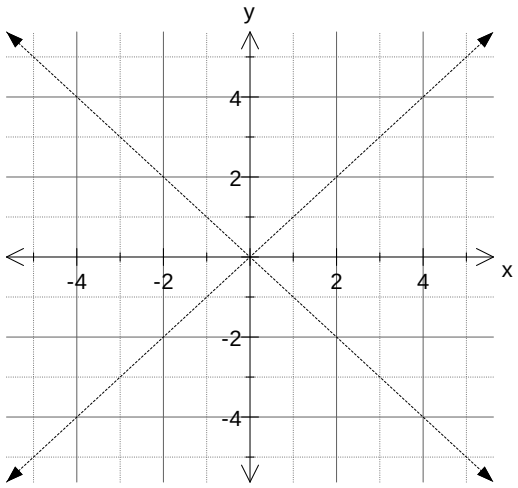
What is a *Piecewise Defined Function* (PDF)?

The simplest and most popular PDF? $f(x) =$

The definition of this function varies depending on the value of *x*.

If $x \geq 0$ then

If $x < 0$ then



Another example of a PDF:

$$f(x) = \begin{cases} (x+5)^2 - 2 & x < -2 \\ 2 - x & -2 \leq x < 4 \\ 6 & x = 4 \\ 1 & x > 4 \end{cases}$$

Determine the values of the following:

$f(-5) =$ $f(4) =$

$f(-2) =$ $f(6) =$

$f(0) =$ $f(2) =$

Sketching the graph of $f(x)$

A. Plot all the endpoints for each sub-function:

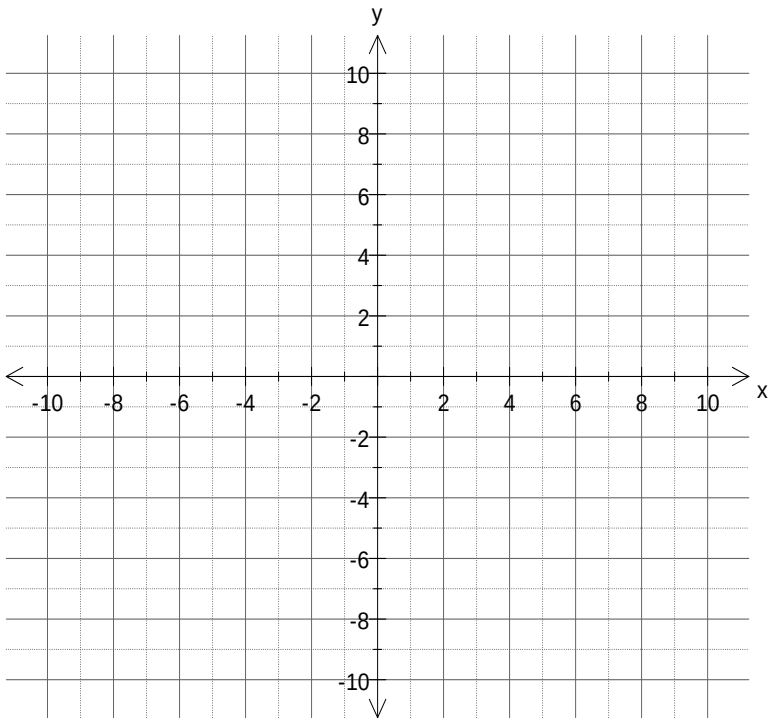
$y_1 = (x+5)^2 - 2$ @ $x = -2,\ y =$

$y_2 = 2 - x$ @ $x = -2,\ y =$

@ $x = 4,\ y =$

$y_3 = 6$ @ $x = 4,\ y =$

$y_4 = 1$ @ $x = 4,\ y =$



B. Sketch the appropriate graph of each function in each of the intervals.

Finding the PDF definitions from a given graph