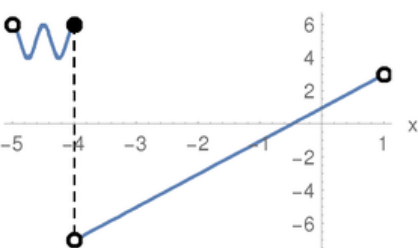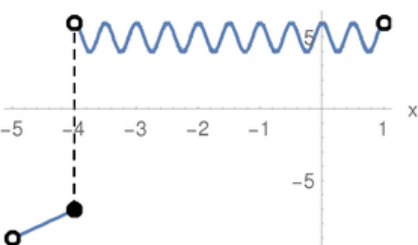# Piecewise Functions

 To define piecewise means that the function values and graphs
are defined over a particular and generally limited
section of the x-axis

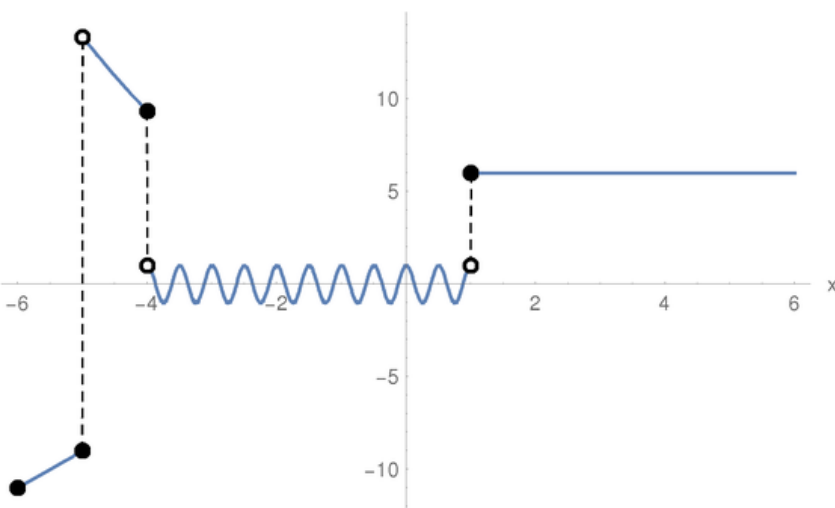$$\begin{cases} \cos(4\pi x) + 5 & -5 < x \le -4 \\ 2x + 1 & -4 < x < 1 \end{cases}$$

where two functions are pieced together, and for that matter
could be pieced differently i.e. swapped:

$$\begin{cases} 2x + 1 & -5 < x \le -4 \\ \cos(4\pi x) + 5 & -4 < x < 1 \end{cases}$$

More and more complicated functions could be pieced together:

$$\begin{cases} 2x + 1 & -6 \le x \le -5 \\ \dfrac{x^2}{3} - x & -5 < x \le -4 \\ \cos(4\pi x) & -4 < x < 1 \\ 6 & x \ge 1 \end{cases}$$

Solid disk refers to inclusion of the point or any of $\le$ $\ge$ = operators
●

Hollow disk refers to the exclusion or any of the $<$ $>$ operators
○