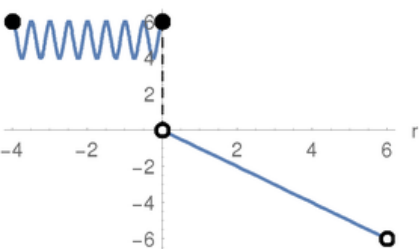


# Piecewise Functions

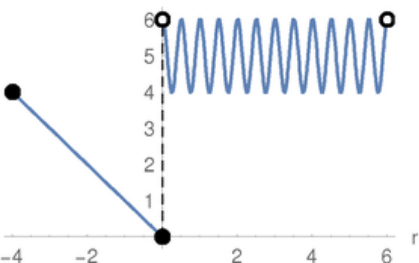
To define piecewise means that the function values and graphs are defined over a particular and generally limited section of the r-axis

$$\begin{cases} \cos(4\pi r) + 5 & -4 \leq r \leq 0 \\ -r & 0 < r < 6 \end{cases}$$



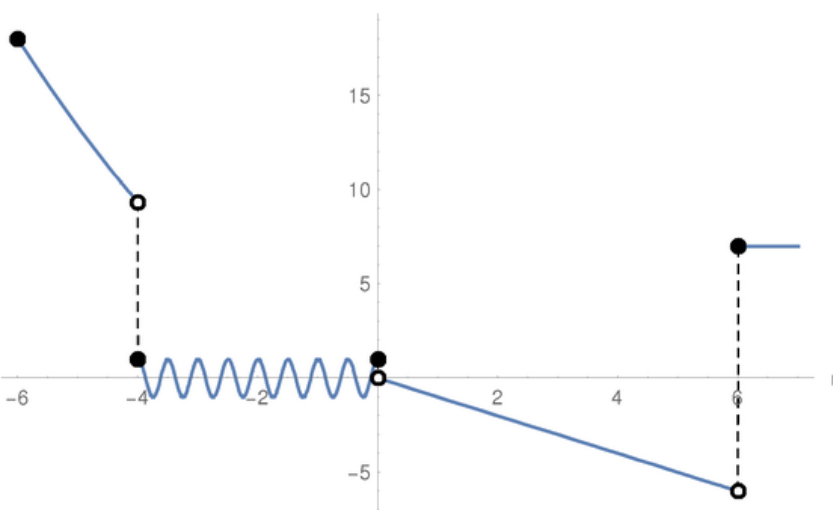
where two functions are stitched together, and for that matter could be pieced differently i.e. swapped:

$$\begin{cases} -r & -4 \leq r \leq 0 \\ \cos(4\pi r) + 5 & 0 < r < 6 \end{cases}$$



More and more complicated functions could be stitched together:

$$\begin{cases} \frac{r^2}{3} - r & -6 \leq r < -4 \\ \cos(4\pi r) & -4 \leq r \leq 0 \\ -r & 0 < r < 6 \\ 7 & r \geq 6 \end{cases}$$



**Solid disk** refers to inclusion of the point or any of  $\leq \geq =$  operators



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

