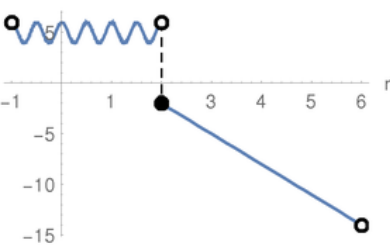


# Piecewise Functions

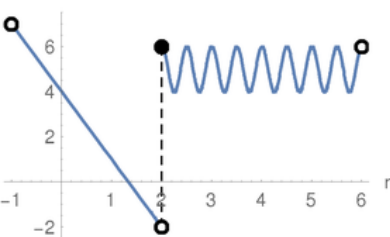
To define piecewise means that the function values and graphs are defined over a particular and generally limited section of the r-axis

$$\begin{cases} \cos(4\pi r) + 5 & -1 < r < 2 \\ 4 - 3r & 2 \leq r < 6 \end{cases}$$



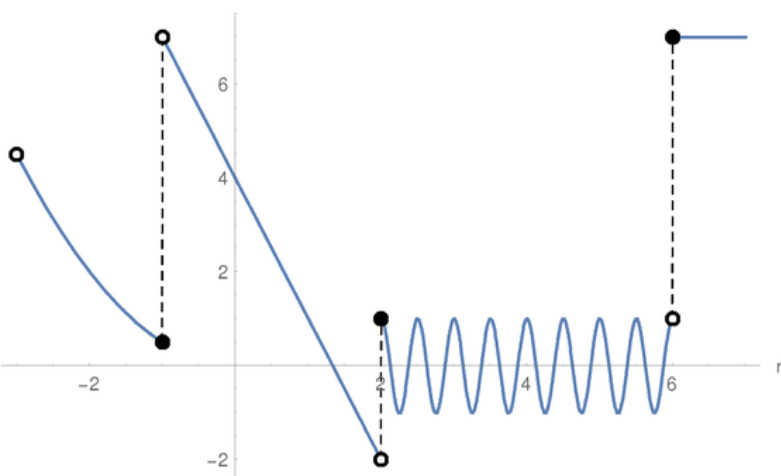
where two functions are stitched together, and for that matter could be pieced differently i.e. swapped:

$$\begin{cases} 4 - 3r & -1 < r < 2 \\ \cos(4\pi r) + 5 & 2 \leq r < 6 \end{cases}$$



More and more complicated functions could be stitched together:

$$\begin{cases} \frac{r^2}{2} & -3 < r \leq -1 \\ 4 - 3r & -1 < r < 2 \\ \cos(4\pi r) & 2 \leq r < 6 \\ 7 & r \geq 6 \end{cases}$$



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



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

