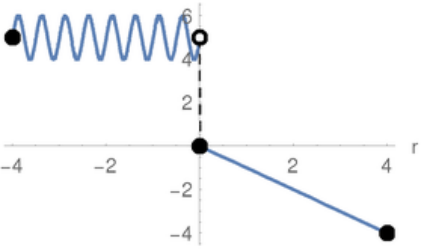
Piecewise Functions

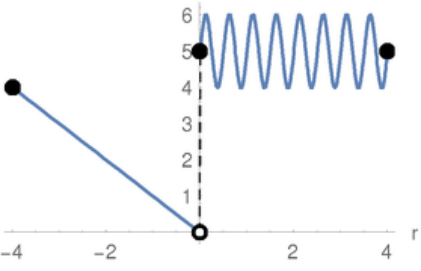
To define piecewise means that the function values and graphs are defined over a particular and generally limited section of the r-axis

$$\begin{cases} \sin(4\pi r) + 5 & -4 \le r < 0 \\ -r & 0 \le r \le 4 \end{cases}$$



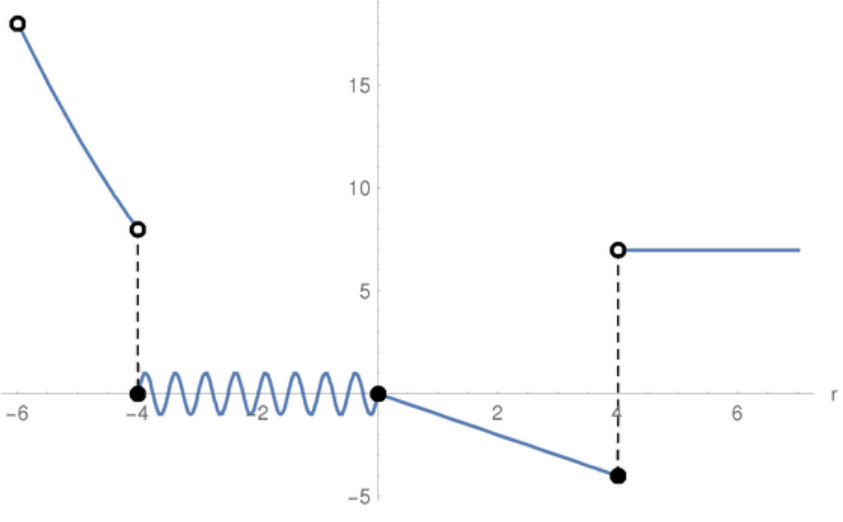
where two functions are pieced together, and for that matter could be pieced differently i.e. swapped:

$$\begin{cases} -r & -4 \le r < 0 \\ \sin(4\pi r) + 5 & 0 \le r \le 4 \end{cases}$$



More and more complicated functions could be pieced together:

$$\begin{cases} \frac{r^2}{2} & -6 < r < -4 \\ \sin(4\pi r) & -4 \le r < 0 \\ -r & 0 \le r \le 4 \\ 7 & r > 4 \end{cases}$$



Solid disk refers to inclusion of the point or any of $\leqslant$ $\geqslant$ $=$ operators

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

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