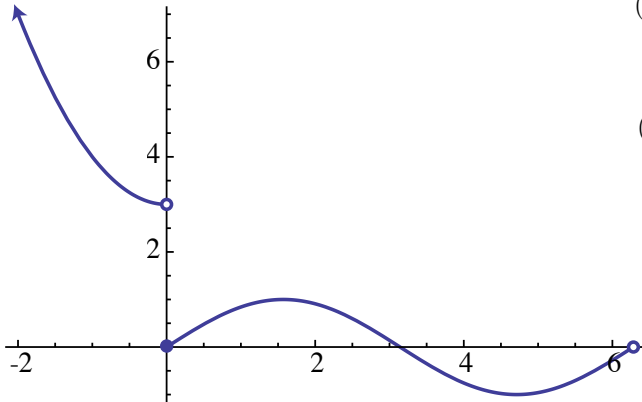


1. Consider  $f(x) = \begin{cases} 3 + x^2, & \text{for } x < 0 \\ \sin x, & \text{for } 0 \leq x < 2\pi \end{cases}$

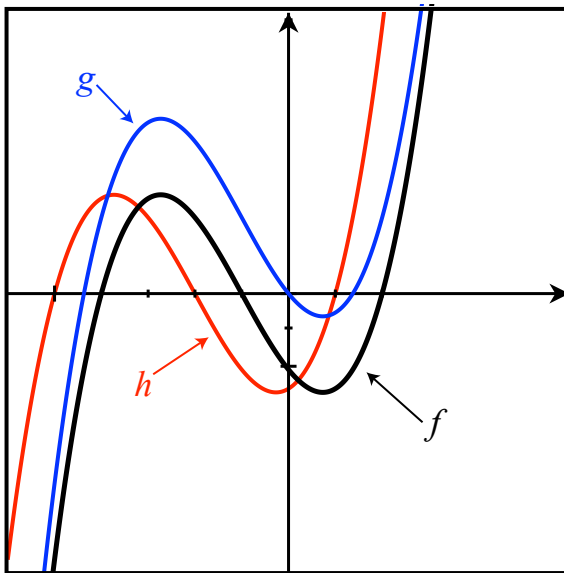
(a) Graph  $f$  is shown below.



(b) The domain of  $f$  is  $(-\infty, 2\pi)$ .

(c) The range of  $f$  is  $[-1, 1] \cup (3, \infty)$ .

2. The graph of  $f$  is shown below along with graphs for  $g$  &  $h$ .



(a) Shifting the graph of  $f$  vertically by two units gives the graph of  $g(x) = f(x) + 2$ .

(b) Shifting the graph of  $f$  one unit to the left gives the graph of  $h(x) = f(x + 1)$ .