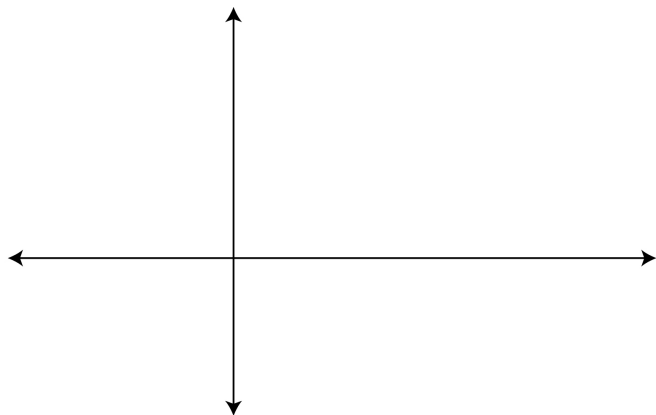


Read directions carefully and show all your work. Partial credit will be assigned based upon the correctness, completeness, and clarity of your answers.

1. (6 pts) 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 below.

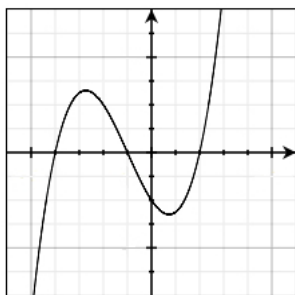


(b) What is the domain of f ?

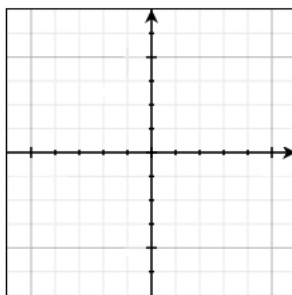
(c) What is the range of f ?

2. (4 pts) Consider the graph of f shown below.

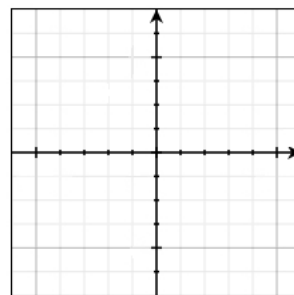
Graph of f



Graph of g



Graph of h



(a) Describe in words how the graph of $g(x) = f(x) + 2$ is related to the graph of f . Sketch g above.

(b) Describe in words how the graph of $h(x) = f(x + 1)$ is related to the graph of f . Sketch h above.