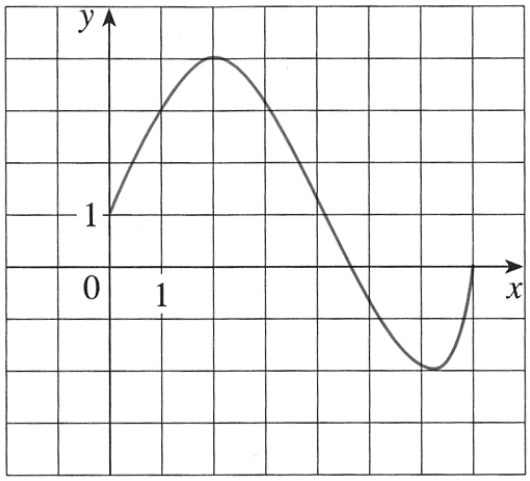
1. The graph of a function f is shown below. Find the following:



   a) $f(1)$ and $f(5)$

   b) the domain of f

   c) the range of f

   d) For which value of x is $f(x) = 4$?

   e) Where is f increasing?

2. Let $f(x) = 3x^2 - x + 2$. Find and simplify the following expressions. Are (b) and (c) different?

   (a) $f(2)$

   (b) $f(a^2)$

   (c) $[f(a)]^2$

   (d) $\dfrac{f(a+h) - f(a)}{h}$

3. Write a formula for the top half of the circle with center $(2, 0)$ and radius 3.

4. Find the domain of each of the following functions. Use interval notation.

   (a) $f(x) = \dfrac{1}{x^2 - 16}$

   (b) $g(x) = \ln(x - 4)$

5. Graph the piecewise defined function.

$$f(x) = \begin{cases} x + 1 & \text{if } x \leq -1 \\ x^2 & \text{if } x > -1 \end{cases}$$