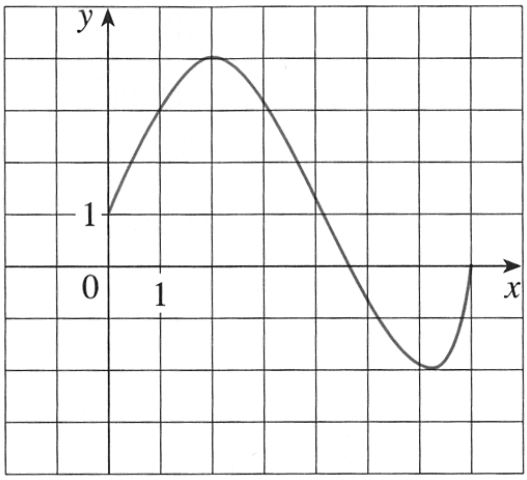
1. The graph of a function f is shown below. Find the following:



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

b) the domain of f

c) the range of f

d) For which values 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.

(a) $f(2)$

(b) $f(a^2)$

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

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

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

1. $f(x) = \dfrac{1}{x^4 - 16}$

2. $g(x) = \ln(x - 4)$

4. Graph each of the following piecewise defined functions.

a) $f(x) = \begin{cases} -1 & \text{if } x \geq 2 \\ 7 - 2x & \text{if } x < 2 \end{cases}$