

# First Quiz for Math 30, section 6432

**Directions:** This quiz is due Wednesday February 13, at 6:00 PM.

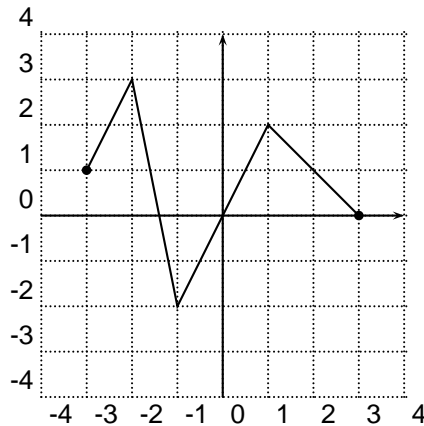
1. Consider the following relation:

$$\{(1, 2), (3, 1), (2, 3), (5, 3), (4, 1), (2, 4)\}$$

- (a) Find its domain and its range.  
(b) Is this relation a function? Justify your answer.
2. Find the difference quotient for the function  $f(x) = 3x^2 - 4x + 5$ .

3. Find the largest possible domain for the function  $f(x) = \frac{2x}{x^2 + 8x + 15}$ .

4. Consider the function  $h$  whose graph is shown. Find:



- (a) The domain and the range.  
(b) Intervals on which  $f$  is increasing, decreasing, or constant.  
(c) Relative minima and maxima.
5. The graph of the function  $g$  is obtained by shifting the graph of the function  $f(x) = 2x^3$  three units to the right along the  $x$ -axis and four units downwards along the  $y$ -axis. Find a formula for  $g(x)$ . (**You don't need to graph  $g$** ).
6. Use the graph of the function  $f(x) = x^3$  to graph

$$y = -(x + 1)^3 - 2$$