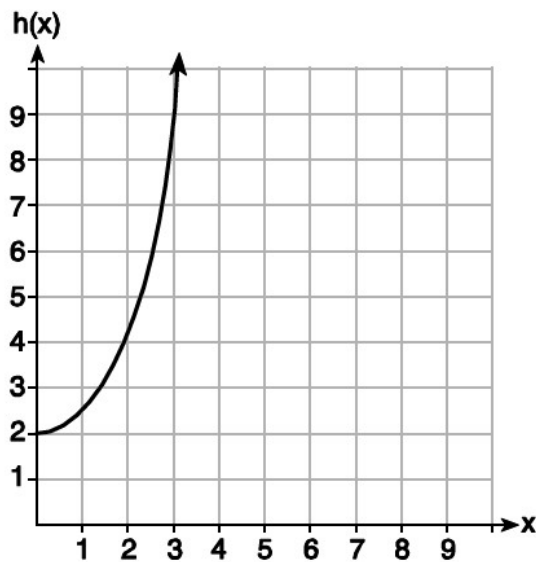


1. Given the functions $g(x)$, $f(x)$, and $h(x)$ shown below:

$$g(x) = x^2 - 2x$$

x	$f(x)$
0	1
1	2
2	5
3	7



The correct list of functions ordered from greatest to least by average rate of change over the interval $0 \leq x \leq 3$ is

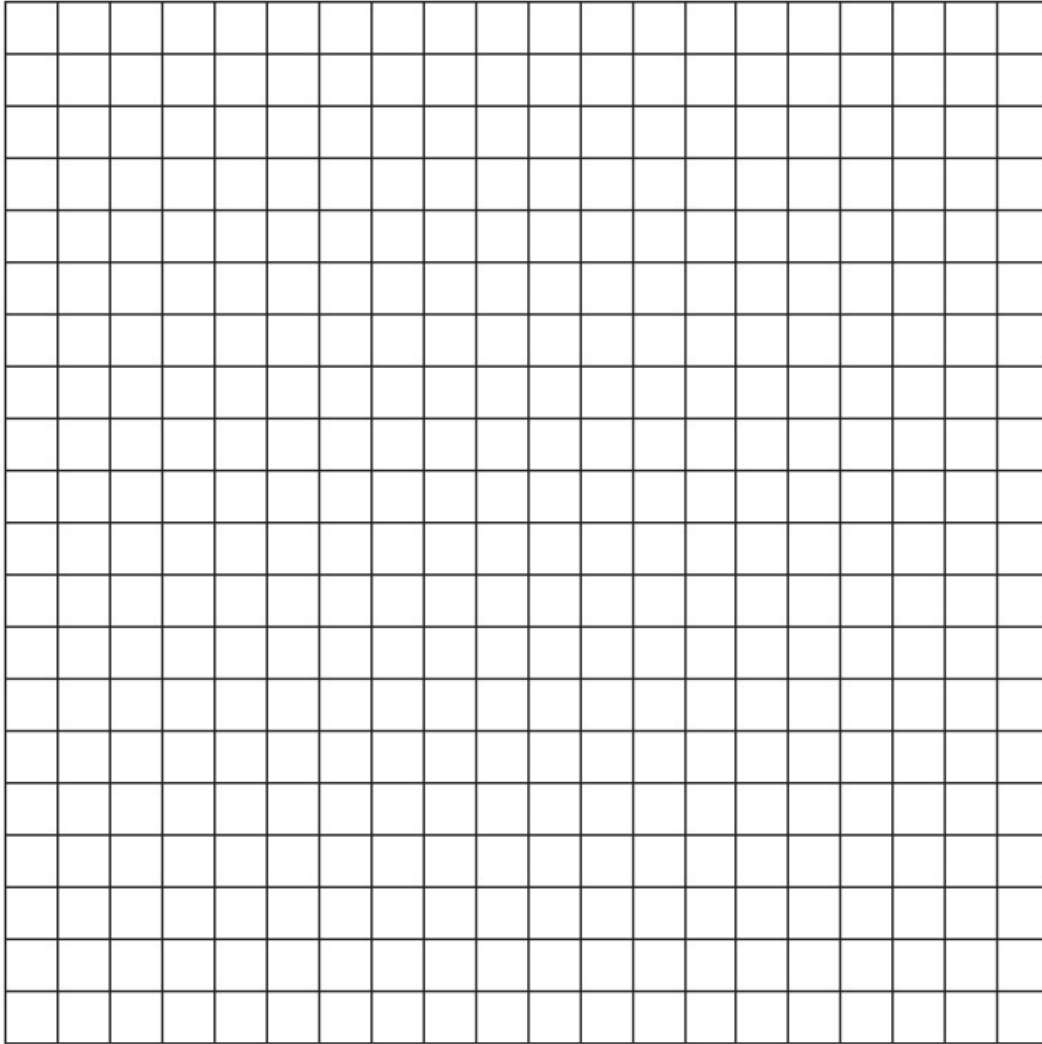
- (1) $f(x)$, $g(x)$, $h(x)$
- (2) $h(x)$, $g(x)$, $f(x)$
- (3) $g(x)$, $f(x)$, $h(x)$
- (4) $h(x)$, $f(x)$, $g(x)$

2. For which quadratic equation is the axis of symmetry $x = 3$?

- (1) $y = -x^2 + 3x + 5$ (3) $y = x^2 + 6x + 3$
- (2) $y = -x^2 + 6x + 2$ (4) $y = x^2 + x + 3$

3. During a snowstorm, a meteorologist tracks the amount of accumulating snow. For the first three hours of the storm, the snow fell at a constant rate of one inch per hour. The storm then stopped for two hours and then started again at a constant rate of one-half inch per hour for the next four hours.

a) On the grid below, draw and label a graph that models the accumulation of snow over time using the data the meteorologist collected.



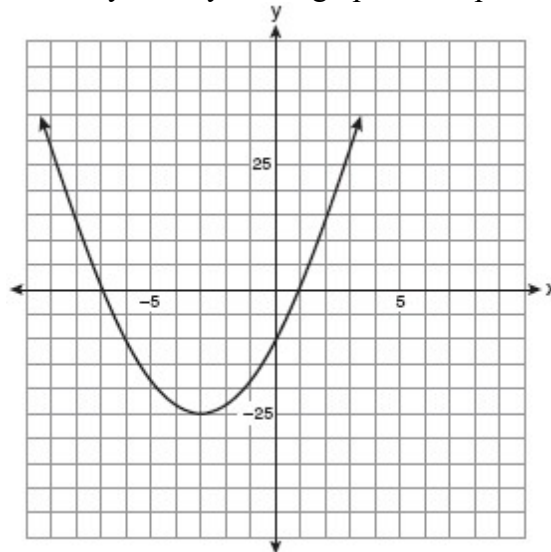
b) If the snowstorm started at 6 p.m., how much snow had accumulated by midnight?

4. The table shows the average sale price p of a house in New York City, for various years t since 1960.

Years since 1960, t	0	1	2	3	4	5	6
Average sale price (in thousands of dollars), p	45	36	29	24	21	20	21

- j. What type of function most appropriately represents this set of data? Explain your reasoning.
- k. In what year is the price at the lowest? Explain how you know.
- l. Write a function to represent the data. Show your work.
- m. Can this function ever be equal to zero? Explain why or why not.

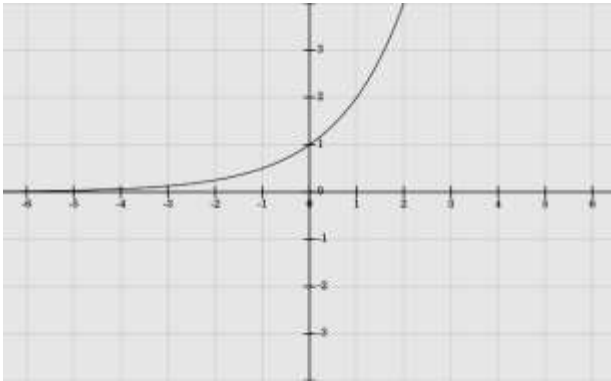
5. Which equation represents the axis of symmetry of the graph of the parabola below?



- (1) $y = -3$ (3) $y = -25$
(2) $x = -3$ (4) $x = -25$

6. Compare the following three functions:

i. A function f is represented by the graph below:



ii. A function g is represented by the following equation:

$$g(x) = (x - 6)^2 - 36$$

iii. A linear function h is represented by the following table:

x	-1	1	3	5	7
$h(x)$	10	14	18	22	26

a. Evaluate each of the following.

$$f(0) =$$

$$g(0) =$$

$$h(0) =$$

b. Calculate the average rate of change of f , g , and h over the interval $[2, 4]$