F.IF.C.9: Comparing Functions 1

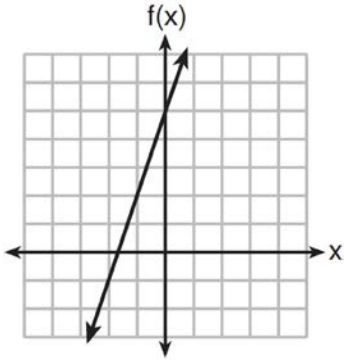
1 Which function has the greatest y-intercept?

1) $f(x) = 3x$

2) $2x + 3y = 12$

3) the line that has a slope of 2 and passes through $(1,-4)$

4)



2 Which function has the largest y-intercept?

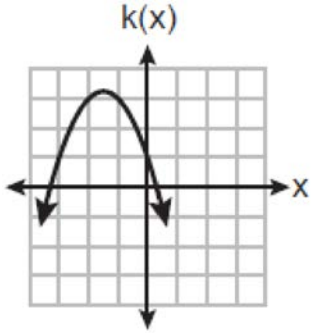
1) $f(x) = -4x - 1$

2)

x	h(x)
−1	1.5
0	2
1	3
2	5

3) $g(x) = |x| + 3$

4)



3 For which function is the value of the y-intercept the *smallest*?

1)

x	f(x)
−4	5
−2	4
0	3
2	2
4	1

2) $g(x) = |x| + 4$

3)

x	h(x)
−1	3
0	2
1	3
2	6
3	11

4) $k(x) = 5^x$

4 Which function has the *smallest* y-intercept?

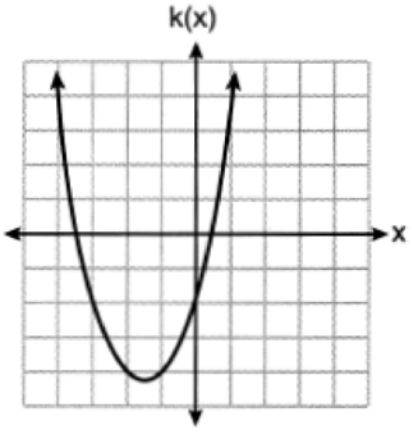
1) $g(x) = 2x - 6$

2)

x	h(x)
–2	$\frac{1}{4}$
–1	$\frac{1}{2}$
0	1
1	2
2	4

3) $f(x) = \sqrt{x} - 2$

4)



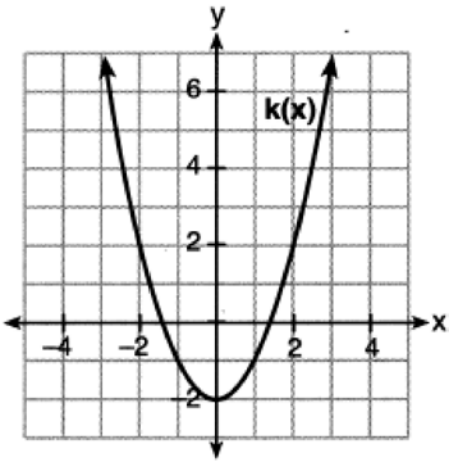
5 Which function has the *smallest* y-intercept value?

1)

x	g(x)
–2	3
0	1
1	0
3	–2

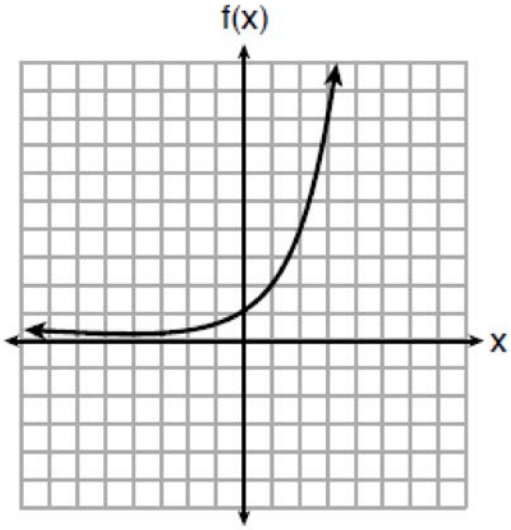
2) $h(x) = \sqrt{x} - 3$

3)



4) $f(x) = x^2 + 2x - 1$

6 Three functions are shown below.



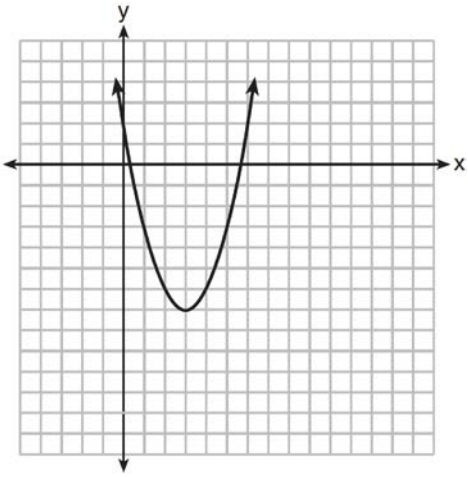
$g(x) = 3^x + 2$

x	h(x)
−5	30
−4	14
−3	6
−2	2
−1	0
0	−1
1	−1.5
2	−1.75

Which statement is true?

1) The y-intercept for $h(x)$ is greater than the y-intercept for $f(x)$.
2) The y-intercept for $f(x)$ is greater than the y-intercept for $g(x)$.
3) The y-intercept for $h(x)$ is greater than the y-intercept for both $g(x)$ and $f(x)$.
4) The y-intercept for $g(x)$ is greater than the y-intercept for both $f(x)$ and $h(x)$.

7 The graph representing a function is shown below.



Which function has a minimum that is *less* than the one shown in the graph?

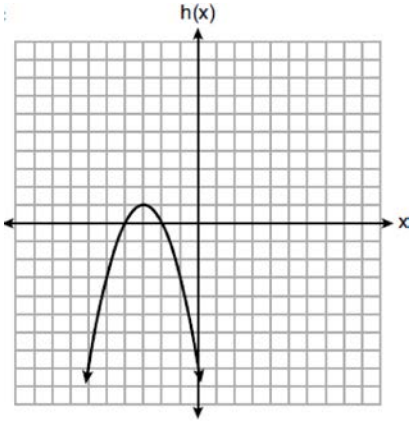
1) $y = x^2 - 6x + 7$
2) $y = |x + 3| - 6$
3) $y = x^2 - 2x - 10$
4) $y = |x - 8| + 2$

8 Three functions are shown below.

A: $g(x) = -\frac{3}{2}x + 4$

B: $f(x) = (x + 2)(x + 6)$

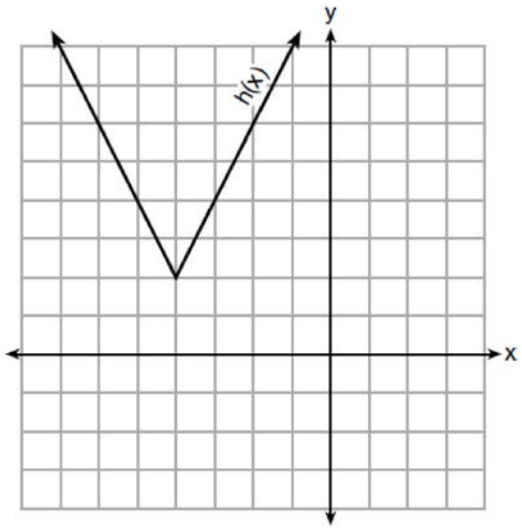
C:



Which statement is true?

1) *B* and *C* have the same zeros.
2) *A* and *B* have the same *y*-intercept.
3) *B* has a minimum and *C* has a maximum.
4) *C* has a maximum and *A* has a minimum.

9 The function $h(x)$, which is graphed below, and the function $g(x) = 2|x + 4| - 3$ are given.



Which statements about these functions are true?

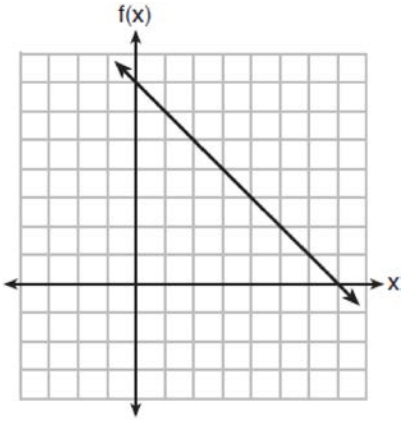
I. $g(x)$ has a lower minimum value than $h(x)$.

II. For all values of x, $h(x) < g(x)$.

III. For any value of x, $g(x) \neq h(x)$.

1) I and II, only
2) I and III, only
3) II and III, only
4) I, II, and III

10 The functions $f(x)$, $q(x)$, and $p(x)$ are shown below.



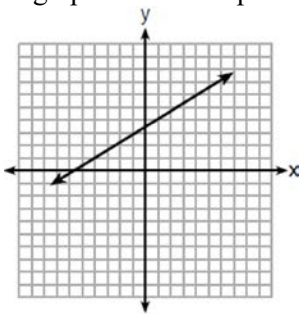
$$q(x) = (x-1)^2 - 6$$

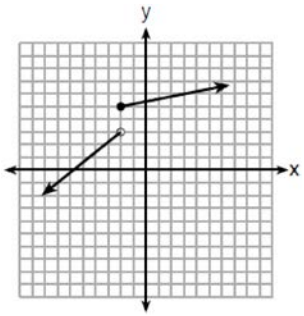
x	p(x)
2	5
3	4
4	3
5	4
6	5

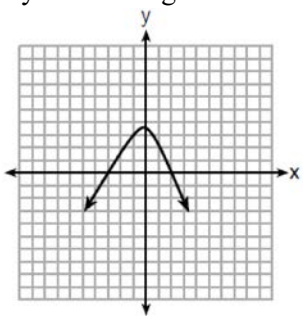
When the input is 4, which functions have the same output value?

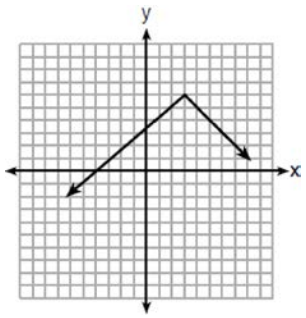
1) $f(x)$ and $q(x)$, only
2) $f(x)$ and $p(x)$, only
3) $q(x)$ and $p(x)$, only
4) $f(x)$, $q(x)$, and $p(x)$

11 Which graph does *not* represent a function that is always increasing over the entire interval $-2 < x < 2$?

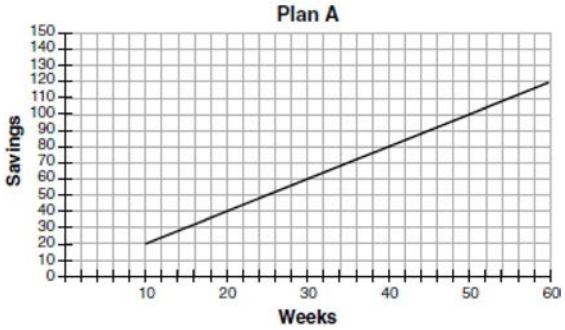
1) 

2) 

3) 

4) 

12 Nancy works for a company that offers two types of savings plans. Plan *A* is represented on the graph below.



Plan *B* is represented by the function $f(x) = 0.01 + 0.05x^2$, where x is the number of weeks. Nancy wants to have the highest savings possible after a year. Nancy picks Plan *B*. Her decision is

1) correct, because Plan *B* is an exponential function and will increase at a faster rate
2) correct, because Plan *B* is a quadratic function and will increase at a faster rate
3) incorrect, because Plan *A* will have a higher value after 1 year
4) incorrect, because Plan *B* is a quadratic function and will increase at a slower rate

F.IF.C.9: Comparing Functions 1
Answer Section

1 ANS: 4
1) $b = 0$; 2) $b = 4$; 3) $b = -6$; 4) $b = 5$

REF: 081611ai

2 ANS: 3
1) -1; 2) 2; 3) 3; 4) 1

REF: 012411ai

3 ANS: 4
$f(0) = 3, g(0) = 4, h(0) = 2, k(0) = 1$

REF: 082314ai

4 ANS: 1
1) -6; 2) 1; 3) -2; 4) -2

REF: 062115ai

5 ANS: 2
1) 1; 2) -3; 3) -2; 4) -1

REF: 082214ai

6 ANS: 4
The y-intercept for $f(x)$ is $(0,1)$. The y-intercept for $g(x)$ is $(0,3)$. The y-intercept for $h(x)$ is $(0,-1)$.

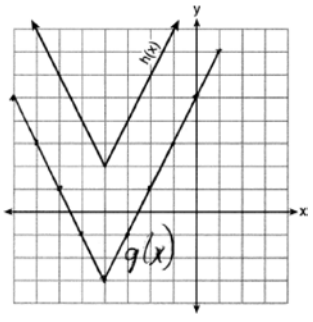
REF: 081811ai

7 ANS: 3 REF: 011622ai

8 ANS: 3
1) B's zeros are -2 and -6 and C's zeros are -4 and -2; 2) A's y-intercept is 4 and B's y-intercept is 12; 3) B in standard form, $a > 0$ and C in standard form, $a < 0$; d) A has no minimum

REF: 061914ai

9 ANS: 2



REF: 081718ai

10 ANS: 4
$f(4) = q(4) = p(4) = 3$

REF: 011921ai

11 ANS: 3 REF: 061820ai

12 ANS: 2 REF: 011723ai