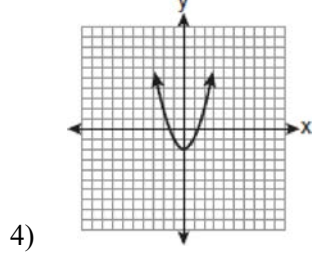## F.BF.B.3: Transformations with Functions 1
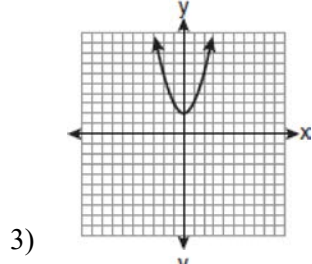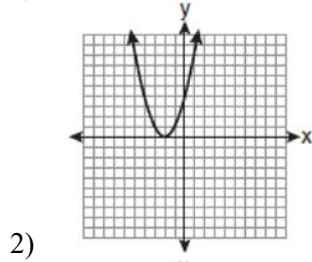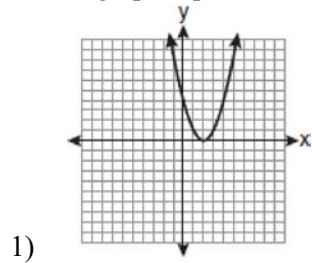
1   The graph below shows the function f(x).
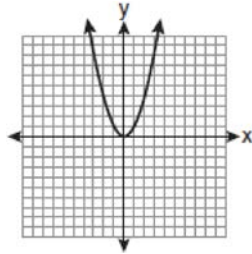
Which graph represents the function $f(x+2)$?

1)

2)

3)

4)

2   Which transformation of the graph of $y = x^2$ would result in the graph of $y = x^2 + 2$?
   1) D_2
   2) $T_{0,2}$
   3) $r_{y=2}$
   4) $R_{0,90°}$

3   Which transformation of $y = 2^x$ results in the function $y = 2^x - 2$?
   1) $T_{0,-1}$
   2) $T_{0,-2}$
   3) r_{y-axis}
   4) r_{x-axis}

4   The minimum point on the graph of the equation $y = f(x)$ is $(-1,-3)$. What is the minimum point on the graph of the equation $y = f(x) + 5$?
   1) $(-1,2)$
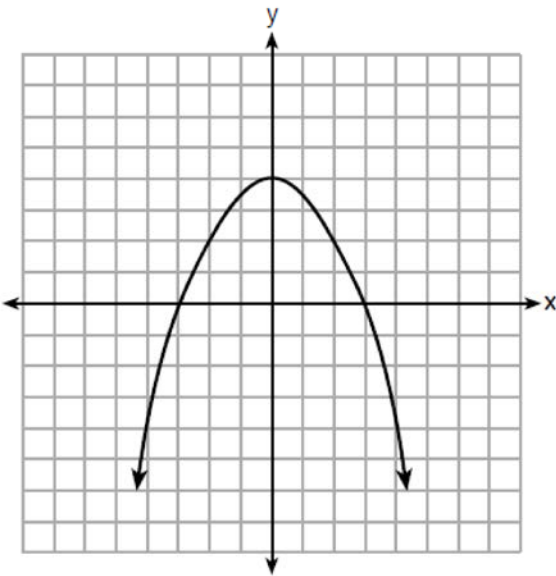   2) $(-1,-8)$
   3) $(4,-3)$
   4) $(-6,-3)$

5   The maximum point on the graph of the equation $y = f(x)$ is $(2,-3)$. What is the maximum point on the graph of the equation $y = f(x-4)$?
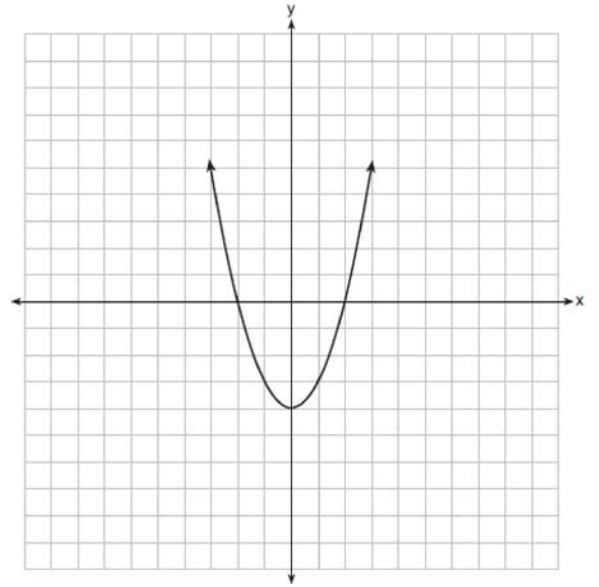   1) $(2,-7)$
   2) $(-2,-3)$
   3) $(6,-7)$
   4) $(6,-3)$

6 Which transformation of $y = f(x)$ moves the graph 7 units to the left and 3 units down?
1) $y = f(x + 7) - 3$
2) $y = f(x + 7) + 3$
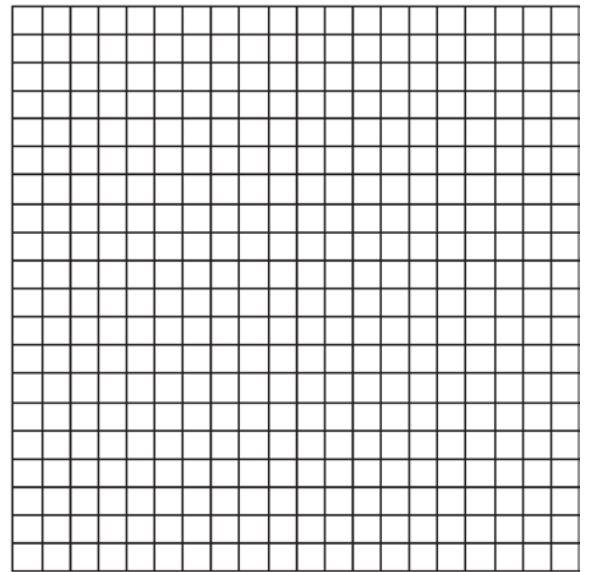3) $y = f(x - 7) - 3$
4) $y = f(x - 7) + 3$

7 The graph of the function $p(x)$ is represented below. On the same set of axes, sketch the function $p(x + 2)$.

8 The function $f(x)$ is graphed on the set of axes below. On the same set of axes, graph $f(x + 1) + 2$.

9 a On the accompanying grid, graph the equation $2y = 2x^2 - 4$ in the interval $-3 \le x \le 3$ and label it a.

b On the same grid, sketch the image of a under $T_{5,-2} \circ r_{x-axis}$ and label it b.
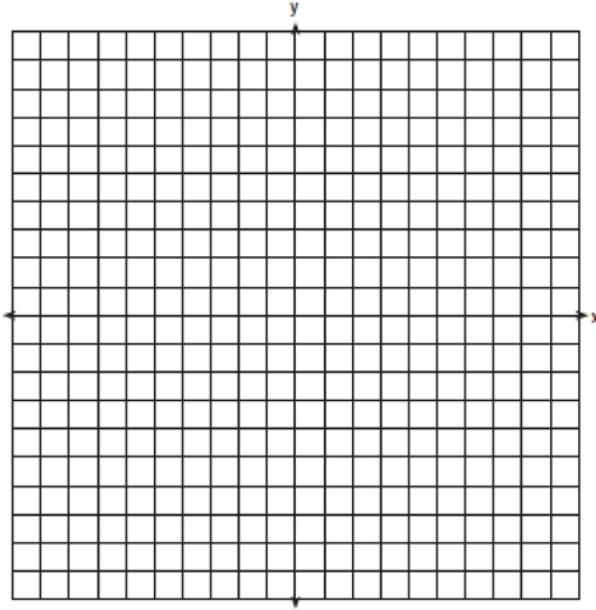
10 Graph and label the following equations, *a* and *b*, on the accompanying set of coordinate axes.

$$a: y = x^2$$

$$b: y = -(x-4)^2 + 3$$

Describe the composition of transformations performed on *a* to get *b*.

11 Two parabolic arches are to be built. The equation of the first arch can be expressed as $y = -x^2 + 9$, with a range of $0 \le y \le 9$, and the second arch is created by the transformation $T_{7,0}$. On the accompanying set of axes, graph the equations of the two arches. Graph the line of symmetry formed by the parabola and its transformation and label it with the proper equation.
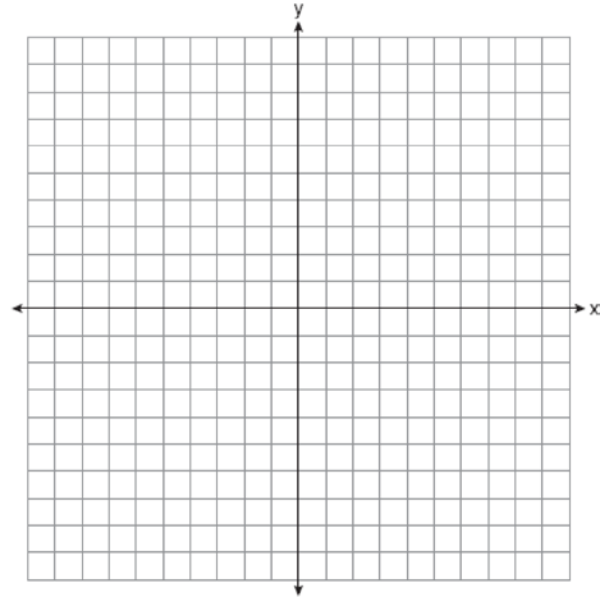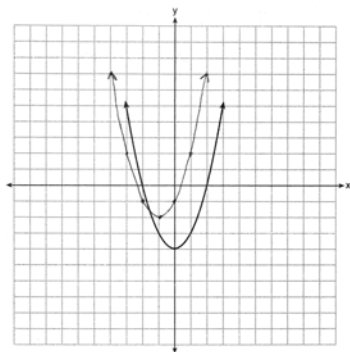
F.BF.B.3: Transformations with Functions 1
Answer Section

1 ANS: 2   REF: fall0926a2
2 ANS: 2   REF: 010605b
3 ANS: 2   REF: 080801b
4 ANS: 1   REF: 081022a2
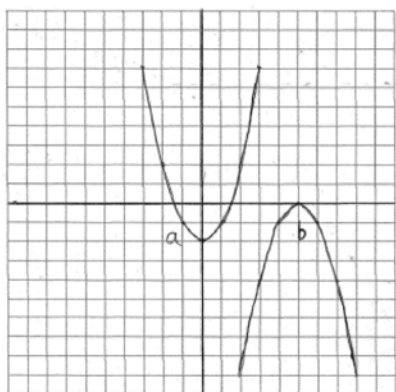5 ANS: 4   REF: 011714a2
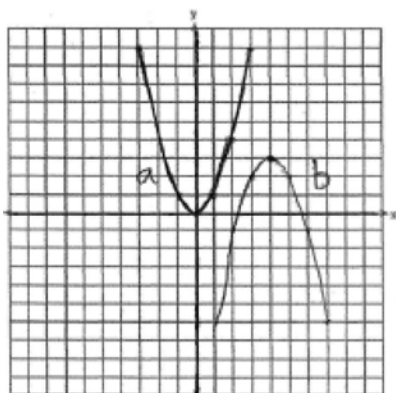6 ANS: 1   REF: 061516a2
7 ANS:
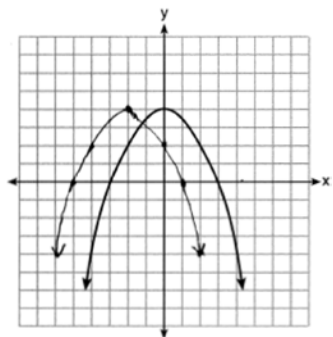
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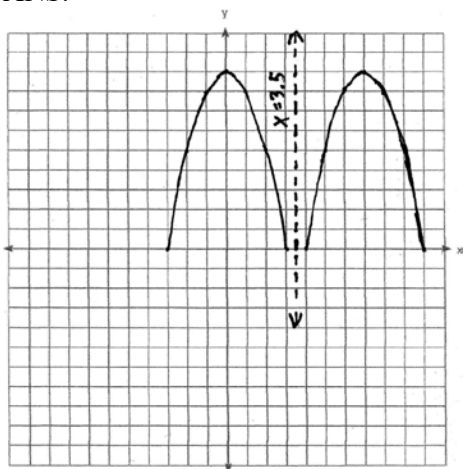
8 ANS:

REF: 061435a2

9   ANS:

REF: 010232b

10   ANS:

$T_{4,3} \circ r_{x-\text{axis}}$, $r_{x=3} \circ T_{4,3}$ or $T_{4,3} \circ R_{180°}$

REF: 080231b

11   ANS:

REF: 060129b