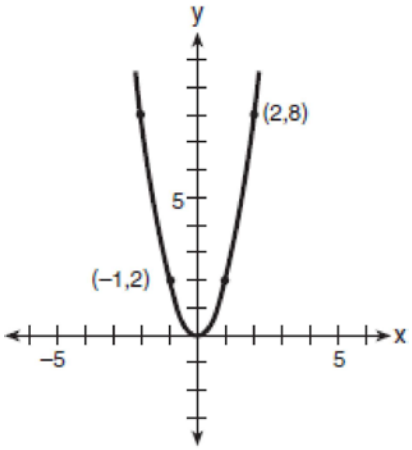
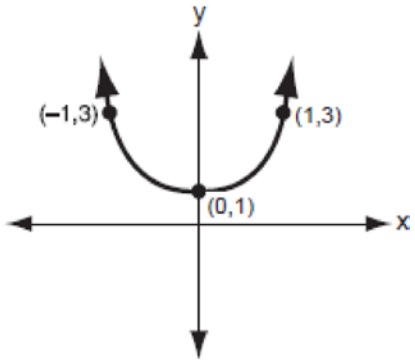
F.BF.A.1: Modeling Quadratic Functions

1 Which quadratic function is shown in the accompanying graph?



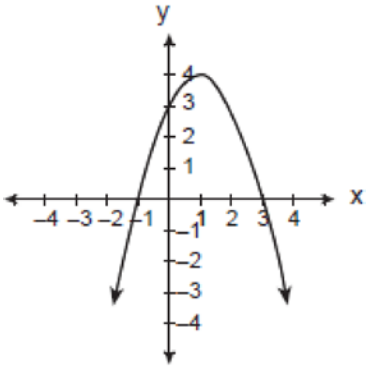
1) $y = -2x^2$
2) $y = 2x^2$
3) $y = -\frac{1}{2}x^2$
4) $y = \frac{1}{2}x^2$

2 Which equation is represented by the accompanying graph?



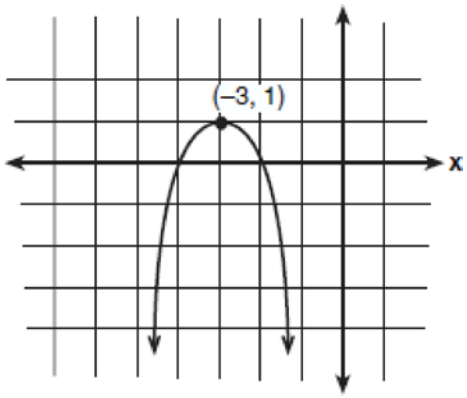
1) $y = 2x^2 + 1$
2) $y = 2(x^2 + 1)$
3) $y = x^2$
4) $y = 2x^2$

3 Which is an equation of the parabola shown in the accompanying diagram?



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

4 Which equation represents the parabola shown in the accompanying graph?

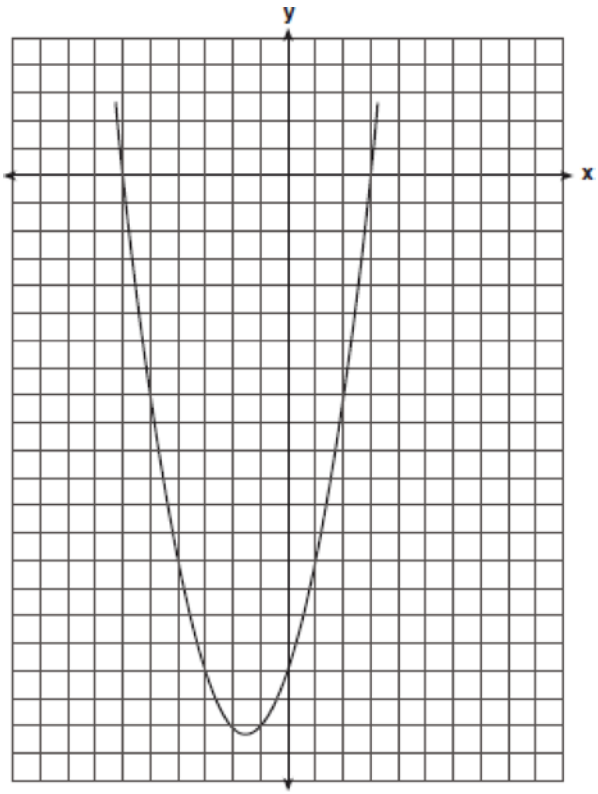


1) $f(x) = (x+1)^2 - 3$
2) $f(x) = -(x-3)^2 + 1$
3) $f(x) = -(x+3)^2 + 1$
4) $f(x) = -(x-3)^2 - 3$

5 What is the equation of a parabola that goes through points $(0,1)$, $(-1,6)$, and $(2,3)$?

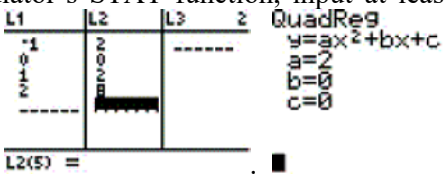
1) $y = x^2 + 1$
2) $y = 2x^2 + 1$
3) $y = x^2 - 3x + 1$
4) $y = 2x^2 - 3x + 1$

6 The graph of a quadratic equation is shown in the accompanying diagram. The scale on the axes is a unit scale. Write an equation of this graph in standard form.



F.BF.A.1: Modeling Quadratic Functions
Answer Section

1 ANS: 2

Since the parabola is cupped up, $a > 0$, eliminating (1) and (3). The point (2, 8) satisfies only $y = 2x^2$. You can also use a graphing calculator's STAT function, input at least three ordered pairs, and calculate the quadratic regression line of best fit. 

REF: 060404b

2 ANS: 1 REF: 010801b

3 ANS: 1

Since the parabola is cupped down, $a < 0$, eliminating (3) and (4). Based upon the graph, the axis of symmetry is $x = 1$. $x = \frac{-b}{2a}$.

$x = \frac{-(2)}{2(-1)}$.

$x = 1$

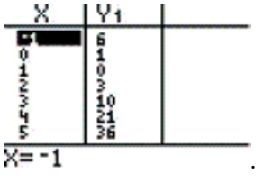
REF: 080017a

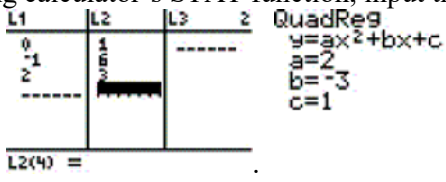
4 ANS: 3

When the equation of a quadratic is in vertex form, $y = a(x - h)^2 + k$, (h, k) is the vertex.

REF: 010303b

5 ANS: 4



. You can also use a graphing calculator's STAT function, input the three ordered pairs, and calculate the quadratic regression line of best fit. 

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REF: 060209b

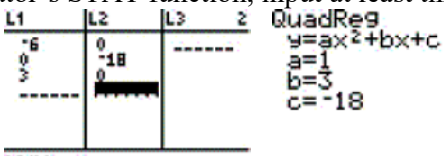
6 ANS:

$y = (x + 6)(x - 3)$

$y = x^2 + 3x - 18$. $a > 0$, the y-intercept is -18, and the roots are -6 and 3. $y = x^2 + 6x - 3x - 18$. You can

$y = x^2 + 3x - 18$

also use a graphing calculator's STAT function, input at least three ordered pairs, and calculate the quadratic



regression line of best fit.

REF: 010328a