Bell Ringer - Simplify

1) $5\sqrt{\frac{32}{121}}$

2) $\frac{\sqrt{90}}{33}$

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1) $5\sqrt{\frac{32}{121}}$

$5 \cdot \frac{\sqrt{16} \cdot \sqrt{2}}{\sqrt{121}}$

$\frac{5 \cdot 4 \cdot \sqrt{2}}{11}$

$\frac{20\sqrt{2}}{11}$

2) $\frac{\sqrt{90}}{33}$

$\frac{\sqrt{9} \cdot \sqrt{10}}{33}$

$\frac{1\cancel{3}\sqrt{10}}{\cancel{33}_{11}}$

$\frac{\sqrt{10}}{11}$

Graphing Quadratic Functions

$$y = ax^2 + bx + c$$

The graph of a quadratic function is a U-shaped curve called a parabola.

Steps to graph:

1. Determine if the graph is a minimum or maximum.
2. Find and plot the vertex (x , y).
3. Identify the axis of symmetry, the vertical line that divides the parabola into two halves.
4. Plot 2 points to the left and right of the vertex.
5. Connect all five points with a smooth curve.

Graph: $y = -3x^2$

maximum

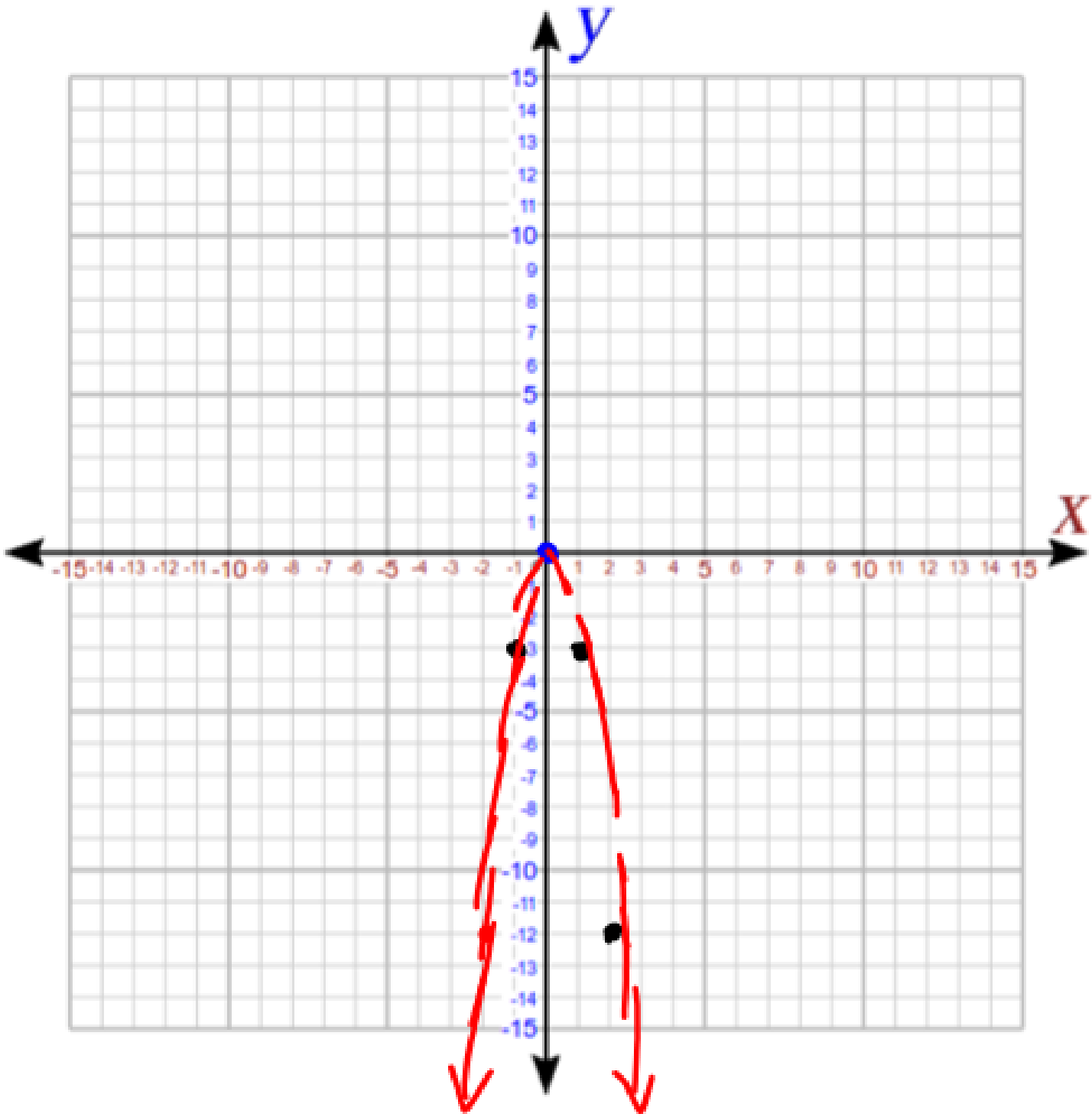
vertex

(0, 0)

$x = \frac{-b}{2a} = \frac{0}{-6} = 0$

axis of sym. $x = 0$

x	y
1	-3
2	-12


y
X
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
-15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
-4
-5
-6
-7
-8
-9
-10
-11
-12
-13
-14
-15

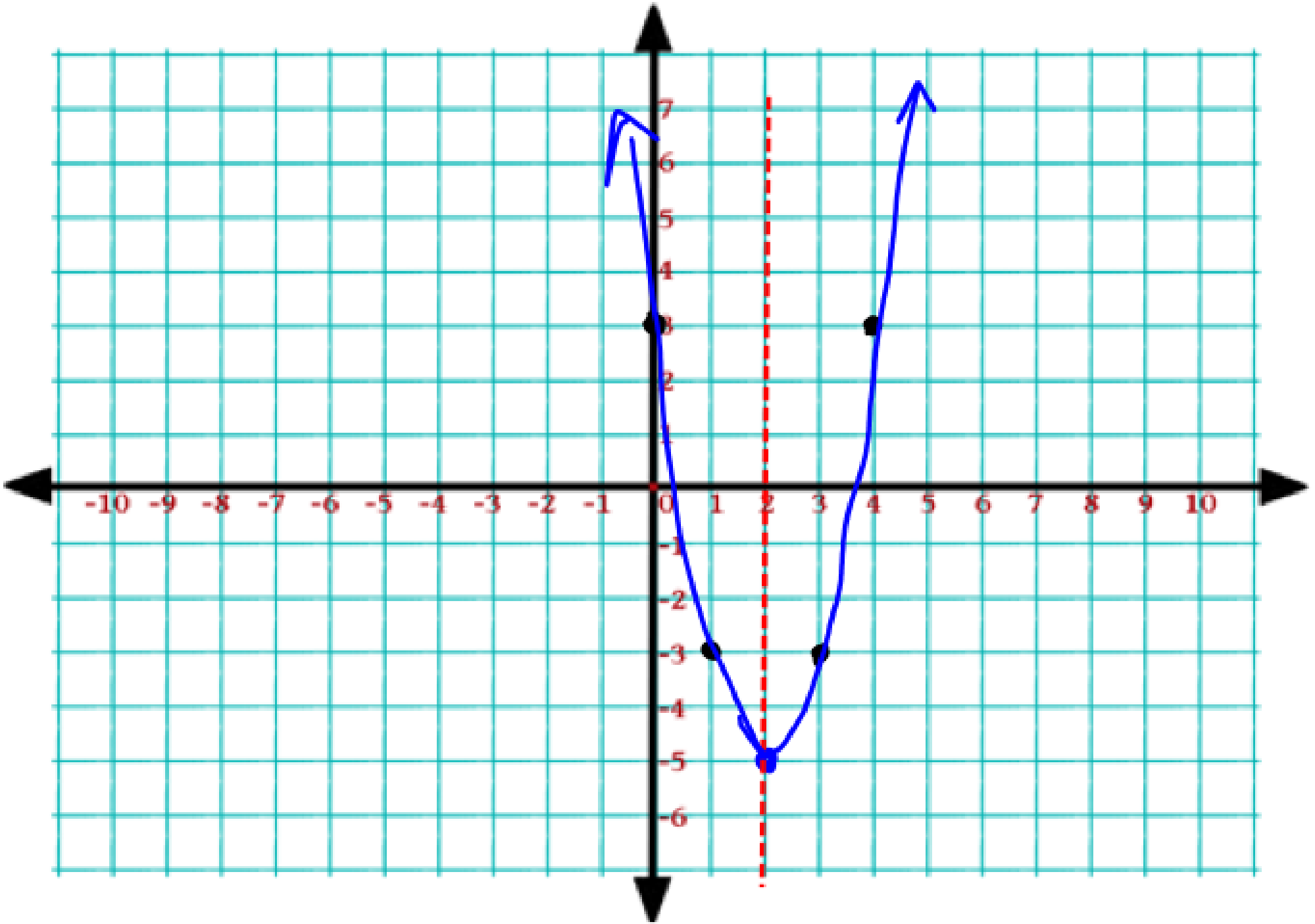
Graph: $y = 2x^2 - 8x + 3$

minimum

$$x = \frac{-b}{2a} = \frac{8}{4} = 2$$

$$y = 2(2)^2 - 8(2) + 3 = -5$$

x	y
1	-3
0	3


7
6
5
4
3
2
1
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
-1
-2
-3
-4
-5
-6

Real-life Applications

The flight of Tyler Giametta's baseball hit can be modeled with the following quadratic: $y = -.009x^2 + 1.5x + 5.5$

Let x = distance in feet the ball travels
Let y = the height in feet of the ball at a given point

1. What is the maximum height the ball reaches? 68 ft
2. How far did the baseball travel before hitting the ground? 166 ft

(83, 68)

$$x = \frac{-1.5}{2(-.009)} = 83$$

$Y = -.009(83)^2 + 1.5(83) + 5.5$

68