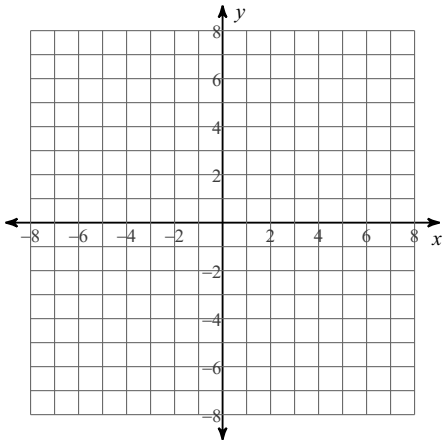
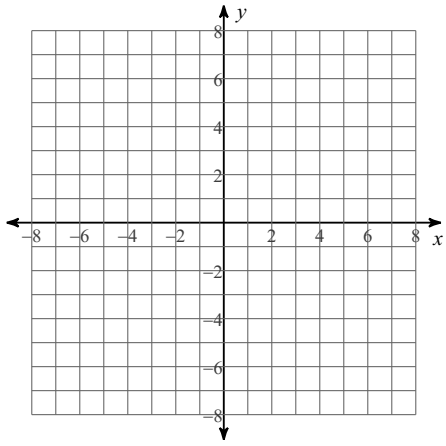
Graphs of Parabolas - Vertex Form

Identify the vertex, equations of the axis of symmetry, direction of opening, min or max value, y-intercept

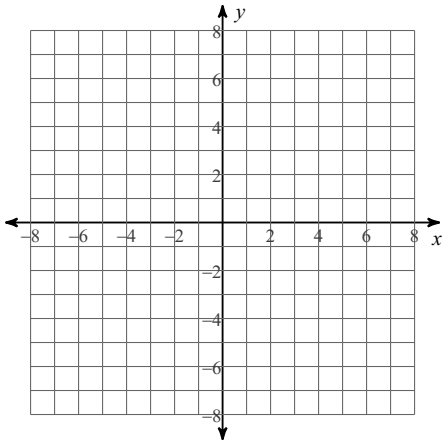
1) $y = (x - 5)^2 - 4$



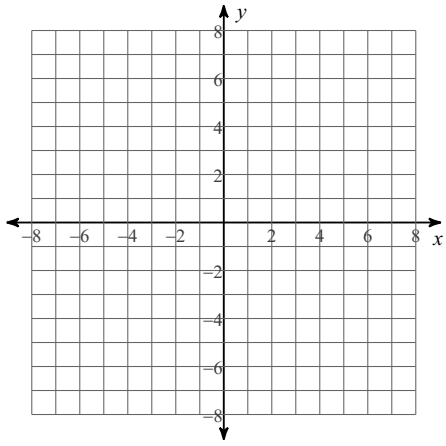
2) $y = -(x + 3)^2 - 1$



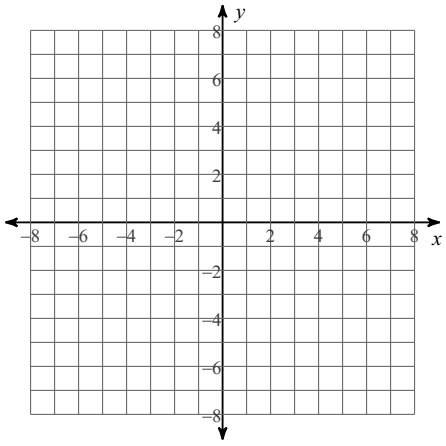
3) $y = -(x - 1)^2 + 1$



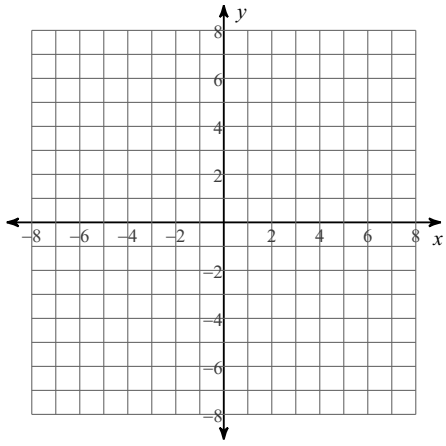
4) $y = (x + 1)^2 + 3$



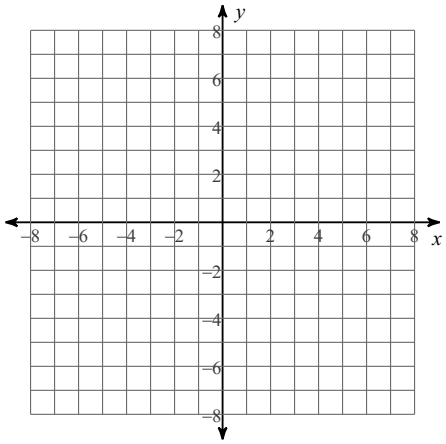
5) $y = -(x + 2)^2 + 1$



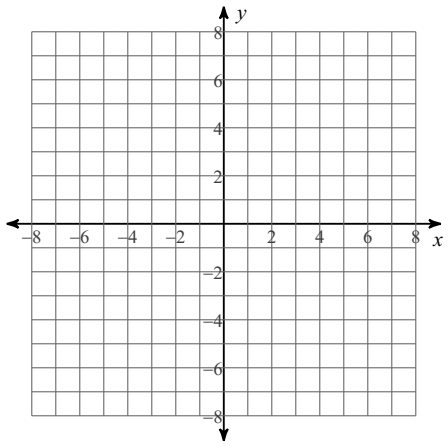
6) $y = -(x + 5)^2$



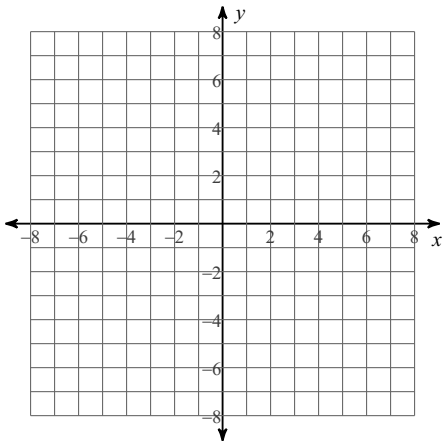
7) $y = 2(x-4)^2 - 8$



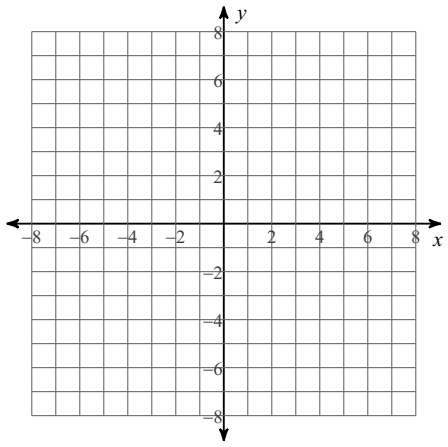
8) $y = \frac{1}{2}(x-2)^2 - 8$



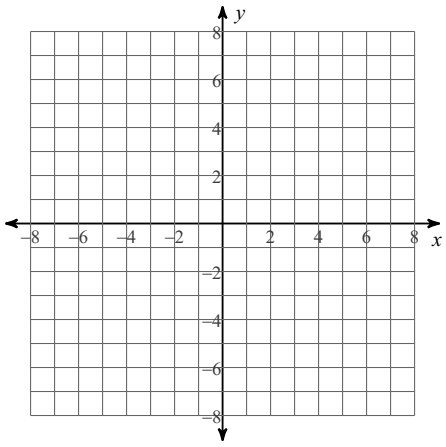
9) $y = (x-6)^2 + 3$



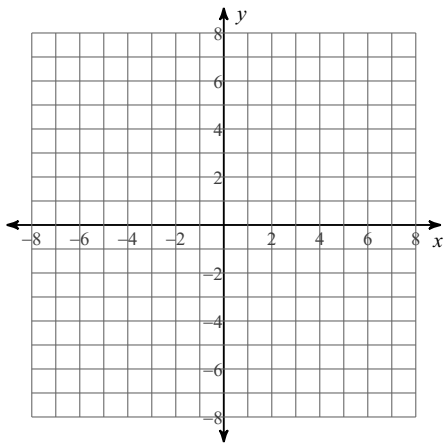
10) $y = (x-6)^2 - 1$



11) $y = -2(x-6)^2 - 1$

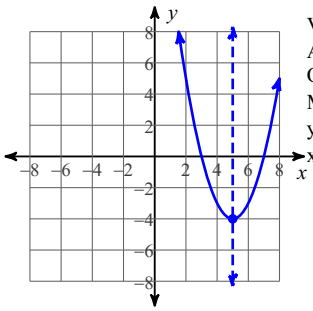


12) $y = \frac{1}{4}(x-4)^2 + 5$



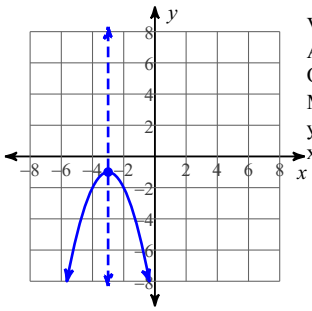
Answers to Graphs of Parabolas - Vertex Form (ID: 1)

1)



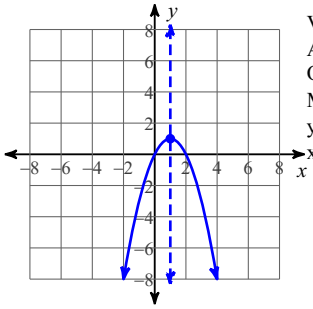
Vertex: $(5, -4)$
Axis of Sym.: $x = 5$
Opens: Up
Min value = -4
y-int: 21
x-int: 7 and 3

2)



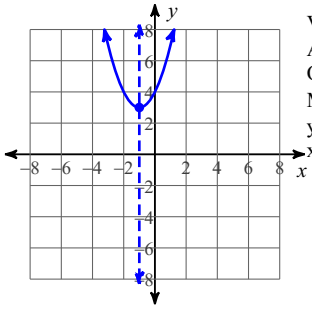
Vertex: $(-3, -1)$
Axis of Sym.: $x = -3$
Opens: Down
Max value = -1
y-int: -10
x-int: None

3)



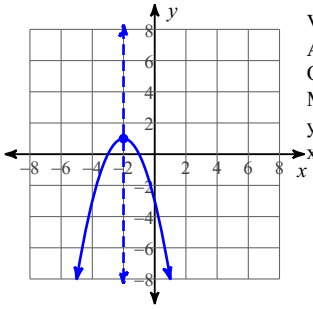
Vertex: $(1, 1)$
Axis of Sym.: $x = 1$
Opens: Down
Max value = 1
y-int: 0
x-int: 0 and 2

4)



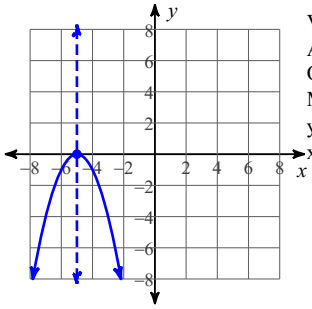
Vertex: $(-1, 3)$
Axis of Sym.: $x = -1$
Opens: Up
Min value = 3
y-int: 4
x-int: None

5)



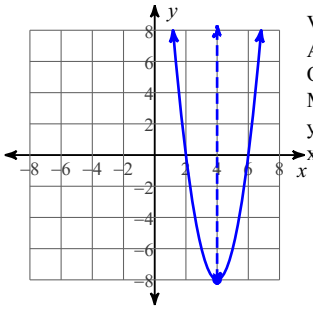
Vertex: $(-2, 1)$
Axis of Sym.: $x = -2$
Opens: Down
Max value = 1
y-int: -3
x-int: -3 and -1

6)



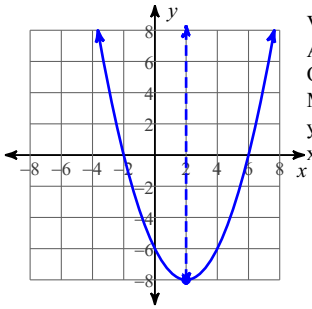
Vertex: $(-5, 0)$
Axis of Sym.: $x = -5$
Opens: Down
Max value = 0
y-int: -25
x-int: -5

7)



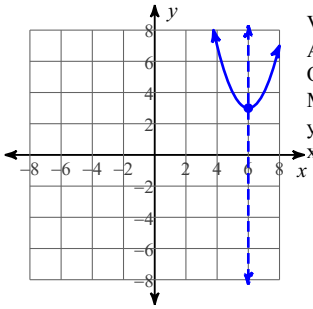
Vertex: $(4, -8)$
Axis of Sym.: $x = 4$
Opens: Up
Min value = -8
y-int: 24
x-int: 6 and 2

8)



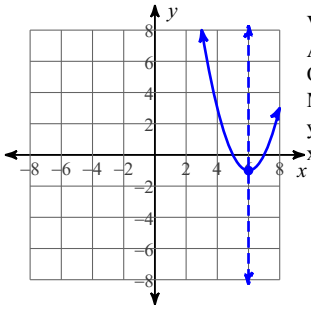
Vertex: $(2, -8)$
Axis of Sym.: $x = 2$
Opens: Up
Min value = -8
y-int: -6
x-int: 6 and -2

9)



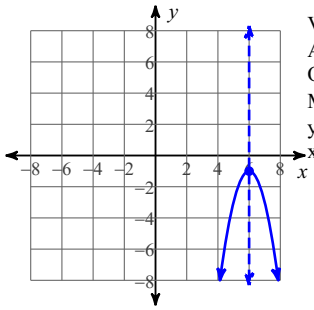
Vertex: $(6, 3)$
Axis of Sym.: $x = 6$
Opens: Up
Min value = 3
y-int: 39
x-int: None

10)



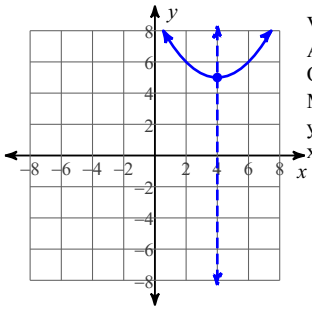
Vertex: $(6, -1)$
Axis of Sym.: $x = 6$
Opens: Up
Min value = -1
y-int: 35
x-int: 7 and 5

11)



Vertex: $(6, -1)$
Axis of Sym.: $x = 6$
Opens: Down
Max value = -1
y-int: -73
x-int: None

12)



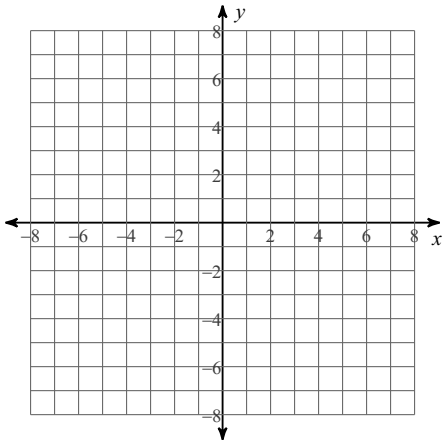
Vertex: $(4, 5)$
Axis of Sym.: $x = 4$
Opens: Up
Min value = 5
y-int: 9
x-int: None

Graphs of Parabolas - Vertex Form

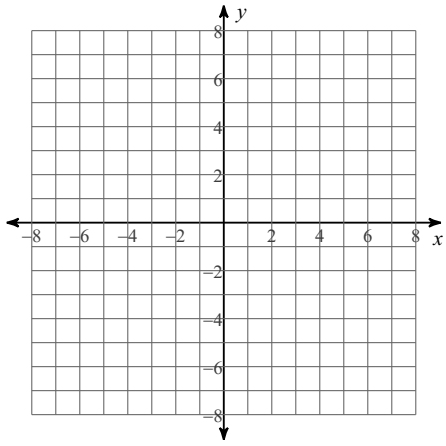
Date_____ Period____

Identify the vertex, axis of symmetry, direction of opening, min/max value, y-intercept, and x-intercepts of each. Then sketch the graph.

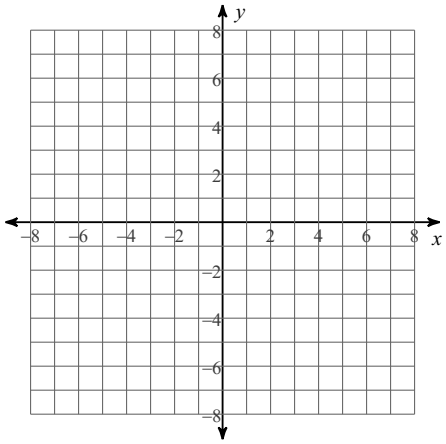
1) $y = -(x - 4)^2 - 1$



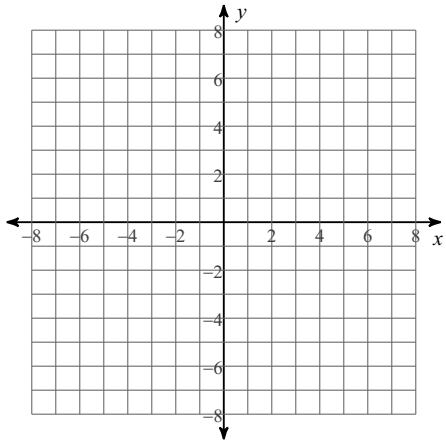
2) $y = -(x + 3)^2 - 1$



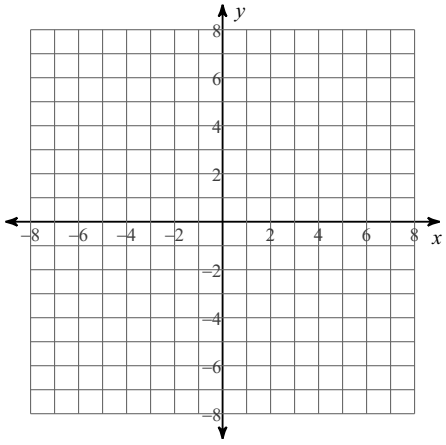
3) $y = -(x + 3)^2 + 4$



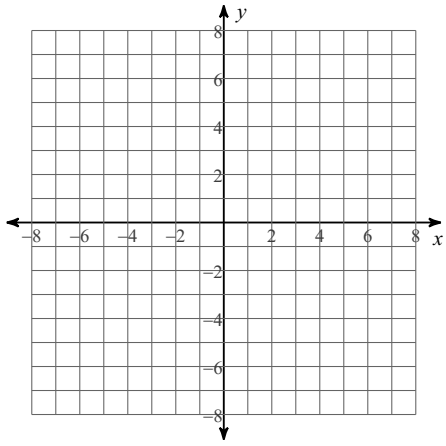
4) $y = -(x + 3)^2$



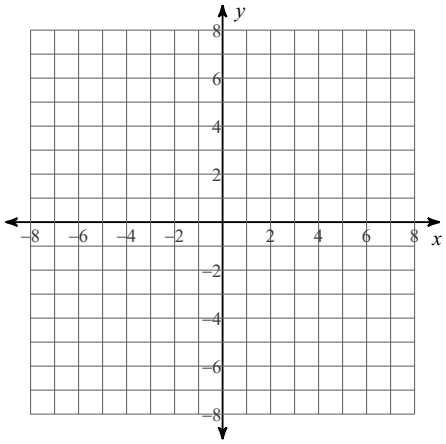
5) $y = -(x - 6)^2 - 1$



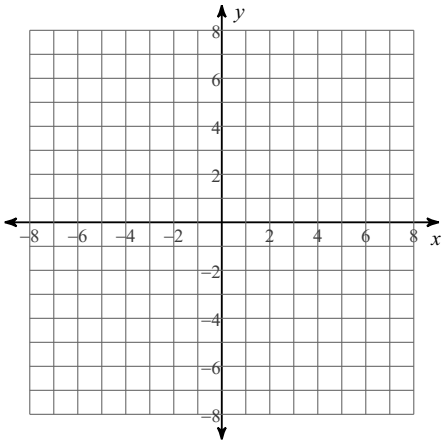
6) $y = -\frac{1}{3}\left(x - \frac{1}{2}\right)^2 + \frac{49}{12}$



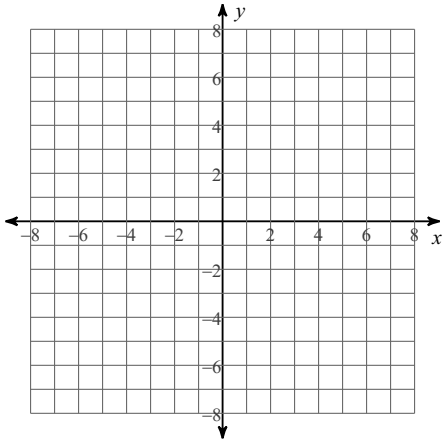
7) $y = \left(x - \frac{9}{2}\right)^2 - \frac{25}{4}$



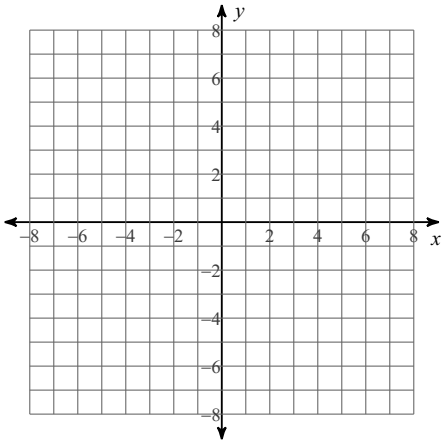
8) $y = -(x + 6)^2 + 1$



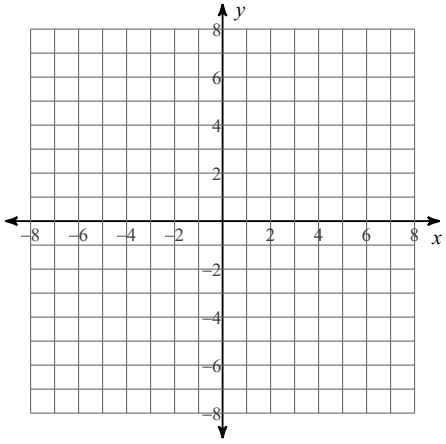
9) $y = (x + 1)^2 - 4$



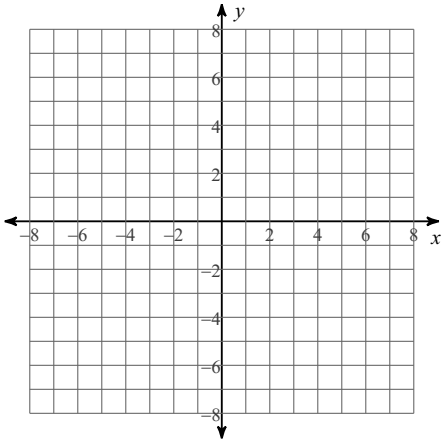
10) $y = \frac{1}{4}\left(x + \frac{3}{2}\right)^2 - \frac{49}{16}$



11) $y = -\left(x + \frac{1}{2}\right)^2 + \frac{9}{4}$

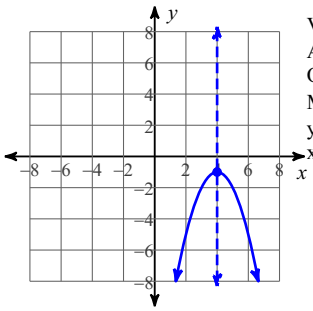


12) $y = (x - 5)^2 + 1$



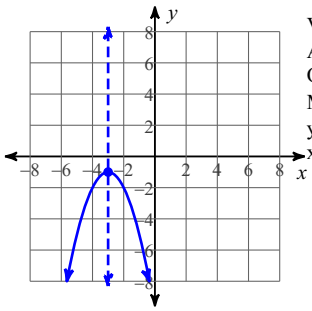
Answers to Graphs of Parabolas - Vertex Form (ID: 2)

1)



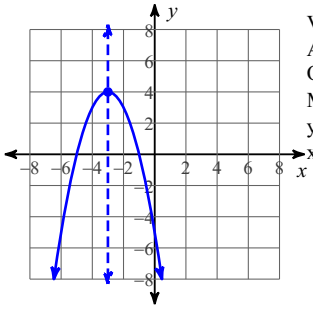
Vertex: $(4, -1)$
Axis of Sym.: $x = 4$
Opens: Down
Max value = -1
y-int: -17
x-int: None

2)



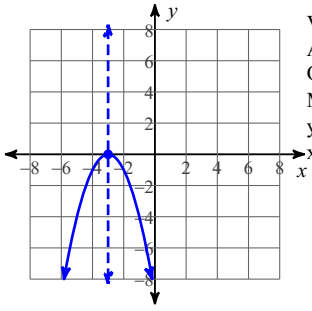
Vertex: $(-3, -1)$
Axis of Sym.: $x = -3$
Opens: Down
Max value = -1
y-int: -10
x-int: None

3)



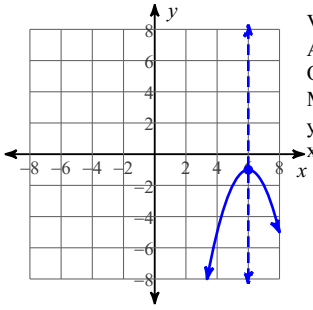
Vertex: $(-3, 4)$
Axis of Sym.: $x = -3$
Opens: Down
Max value = 4
y-int: -5
x-int: -5 and -1

4)



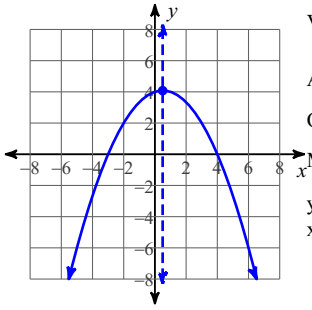
Vertex: $(-3, 0)$
Axis of Sym.: $x = -3$
Opens: Down
Max value = 0
y-int: -9
x-int: -3

5)



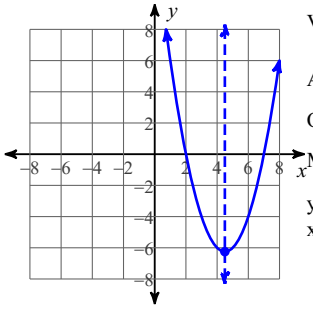
Vertex: $(6, -1)$
Axis of Sym.: $x = 6$
Opens: Down
Max value = -1
y-int: -37
x-int: None

6)



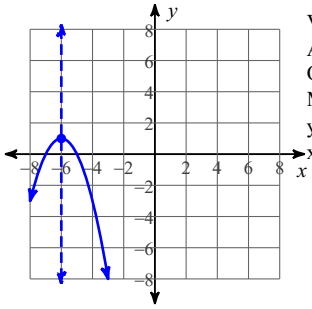
Vertex: $\left(\frac{1}{2}, \frac{49}{12}\right)$
Axis of Sym.: $x = \frac{1}{2}$
Opens: Down
Max value = $\frac{49}{12}$
y-int: 4
x-int: 4 and -3

7)



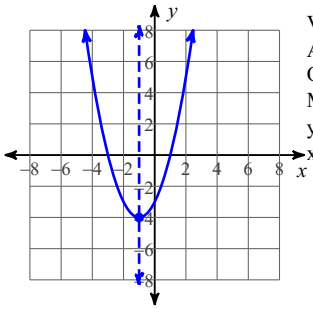
Vertex: $\left(\frac{9}{2}, -\frac{25}{4}\right)$
Axis of Sym.: $x = \frac{9}{2}$
Opens: Up
Min value = $-\frac{25}{4}$
y-int: 14
x-int: 7 and 2

8)



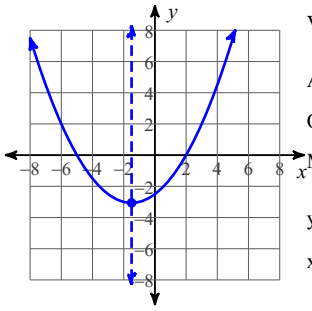
Vertex: $(-6, 1)$
Axis of Sym.: $x = -6$
Opens: Down
Max value = 1
y-int: -35
x-int: -7 and -5

9)



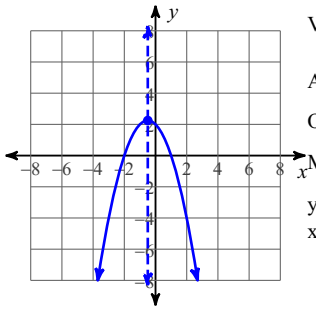
Vertex: $(-1, -4)$
Axis of Sym.: $x = -1$
Opens: Up
Min value = -4
y-int: -3
x-int: 1 and -3

10)



Vertex: $\left(-\frac{3}{2}, -\frac{49}{16}\right)$
Axis of Sym.: $x = -\frac{3}{2}$
Opens: Up
Min value = $-\frac{49}{16}$
y-int: $-\frac{5}{2}$
x-int: 2 and -5

11)



Vertex: $\left(-\frac{1}{2}, \frac{9}{4}\right)$

Axis of Sym.: $x = -\frac{1}{2}$

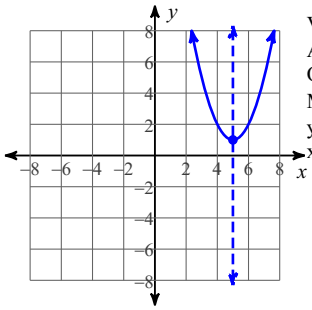
Opens: Down

Max value = $\frac{9}{4}$

y-int: 2

x-int: 1 and –2

12)



Vertex: $(5, 1)$

Axis of Sym.: $x = 5$

Opens: Up

Min value = 1

y-int: 26

x-int: None