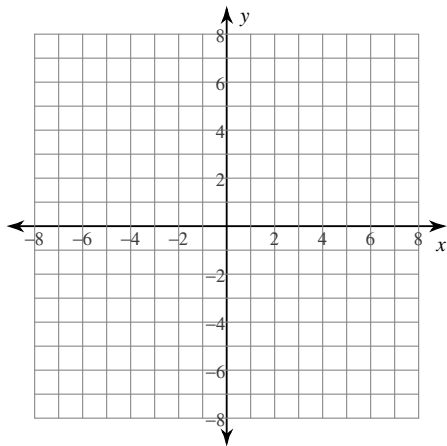


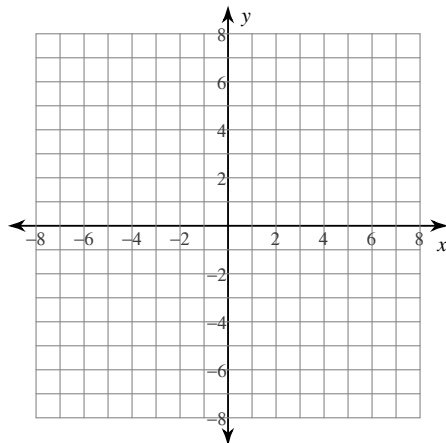
## Midterm Review

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

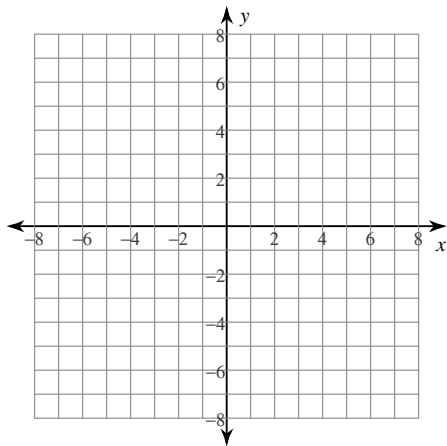
1)  $y = -\frac{1}{2}x^2 + 2x$



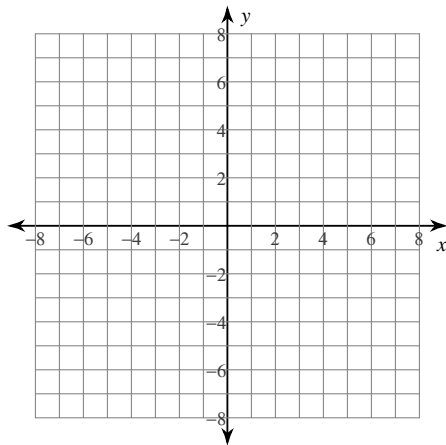
2)  $y = 2x^2 + 8x + 8$



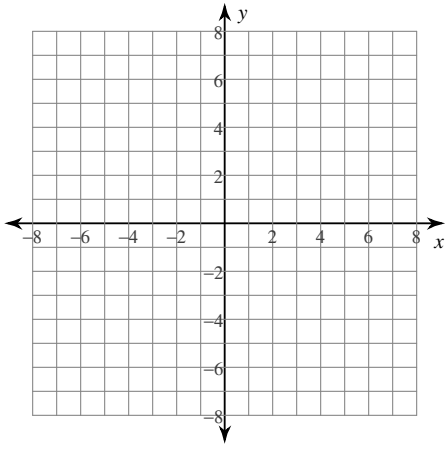
3)  $y = \frac{2}{3}x^2 - \frac{4}{3}x + \frac{2}{3}$



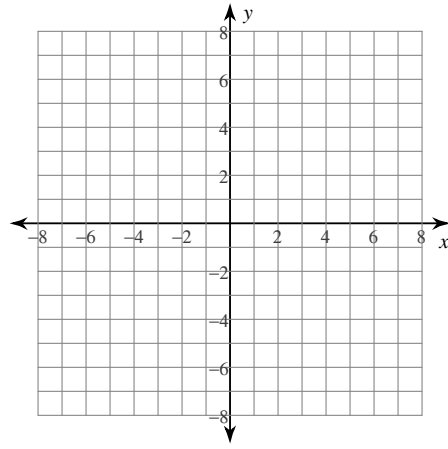
4)  $y = -x^2 + 8x - 21$



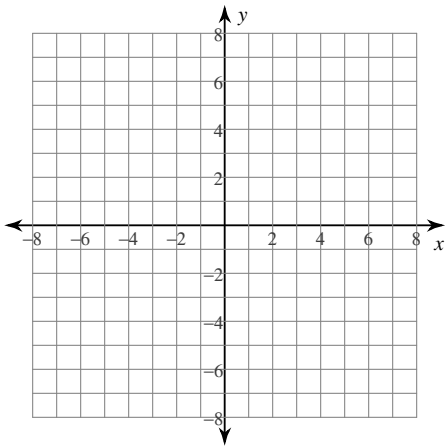
5)  $y = x^2 - 4x + 7$



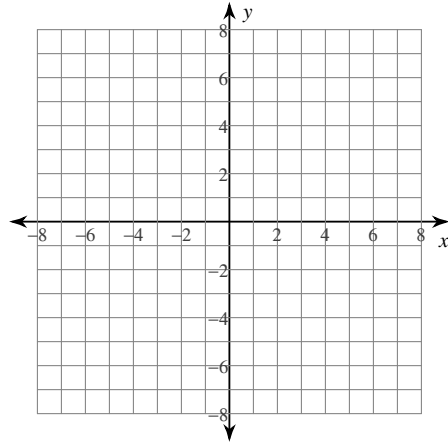
6)  $y = 2x^2 + 4x - 2$



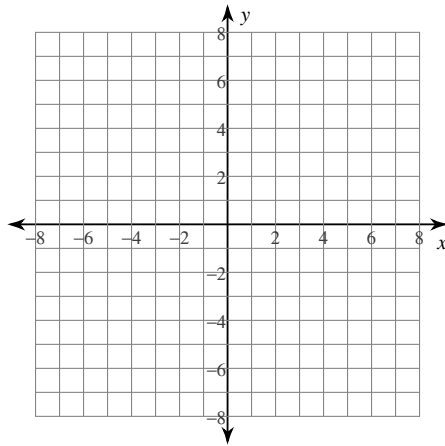
7)  $y = \frac{1}{3}x^2 - \frac{4}{3}x + \frac{4}{3}$



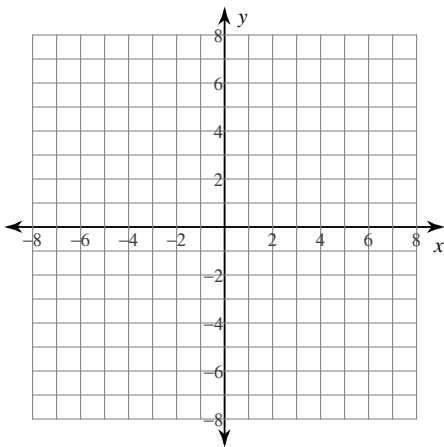
8)  $y = -x^2 - 8x - 19$



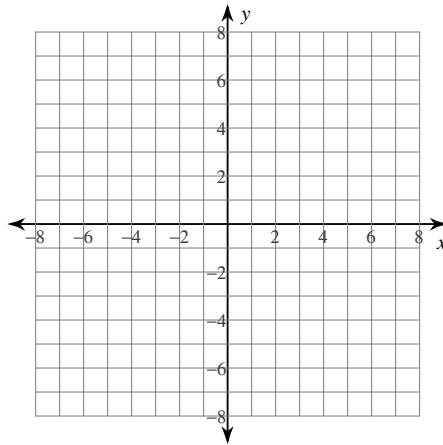
9)  $y = (x + 1)^2 - 1$



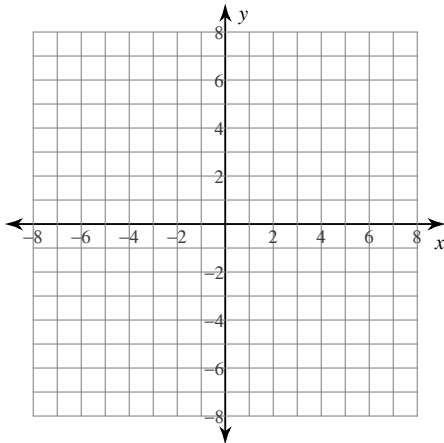
$$10) y = -\frac{1}{3}x^2 - 2$$



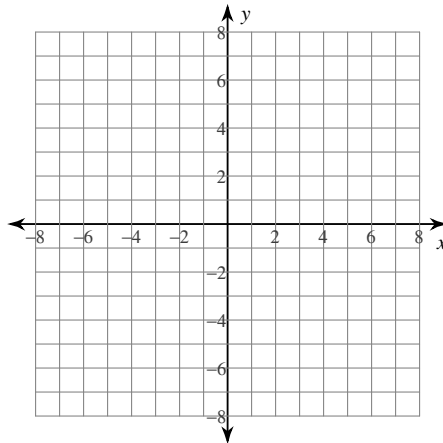
$$11) y = -2(x - 5)^2 - 1$$



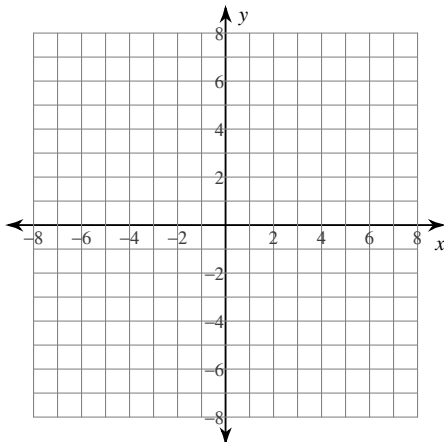
$$12) y = -2(x - 4)^2 - 1$$



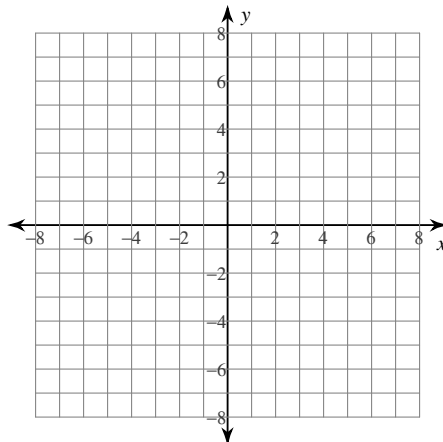
$$13) y = -(x - 6)^2 - 4$$



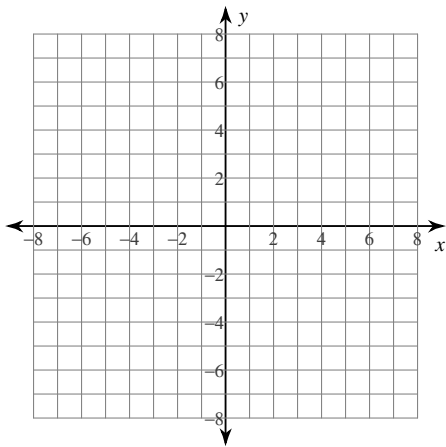
$$14) y = (x + 2)^2 + 2$$



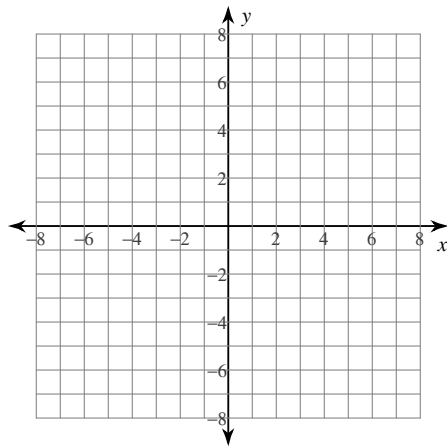
$$15) y = -(x - 1)^2 - 3$$



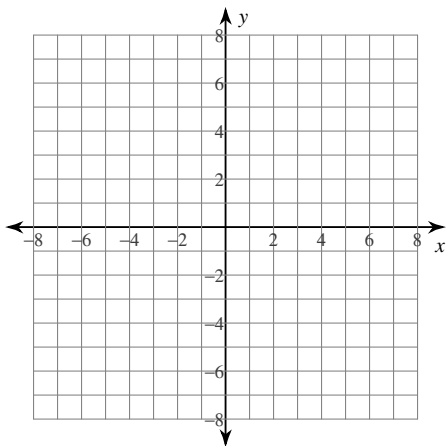
$$16) y = (x - 4)^2 + 3$$



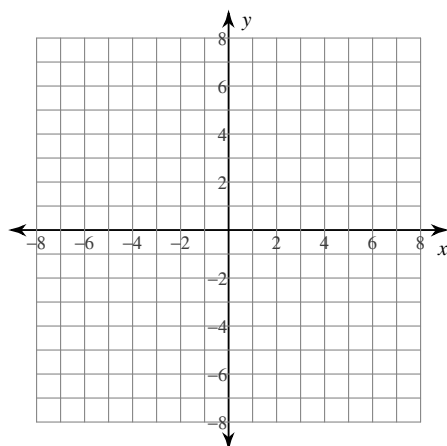
$$17) -(y + 2) = (x - 2)^2$$



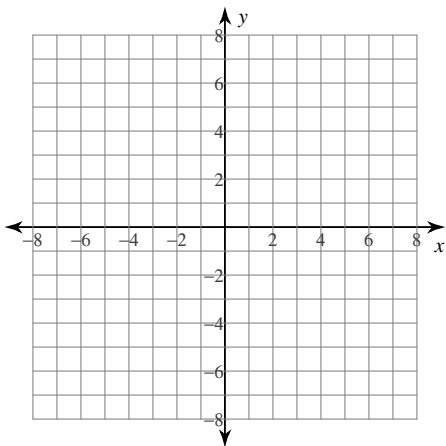
$$18) y - 2 = (x - 6)^2$$



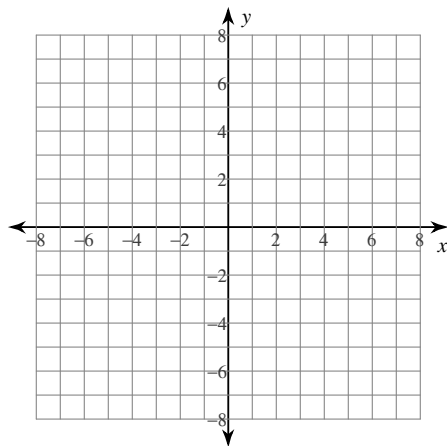
$$19) \frac{1}{2}(y + 5) = (x - 3)^2$$



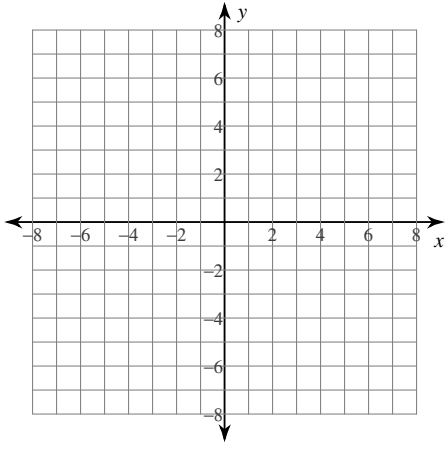
$$20) -(y + 3) = (x + 3)^2$$



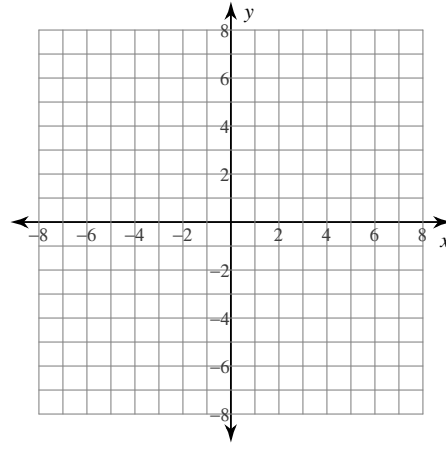
$$21) -3(y + 4) = (x + 5)^2$$



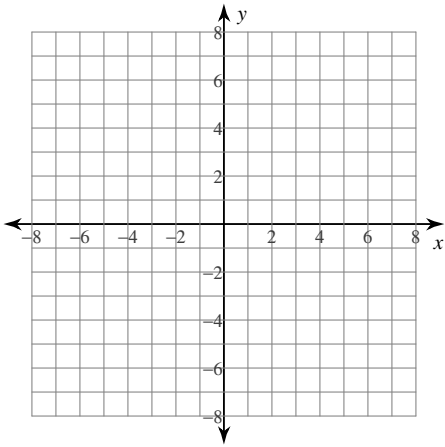
$$22) y + 4 = (x - 4)^2$$



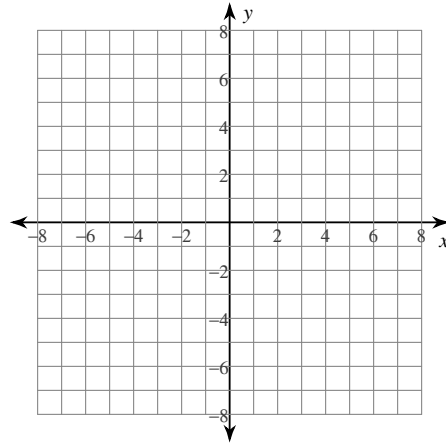
$$23) y + 2 = (x + 6)^2$$



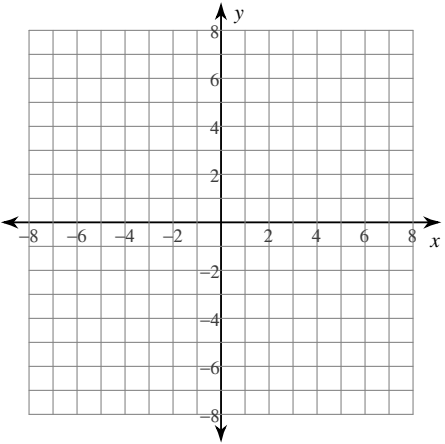
$$24) -\frac{1}{2}(y + 4) = (x - 5)^2$$



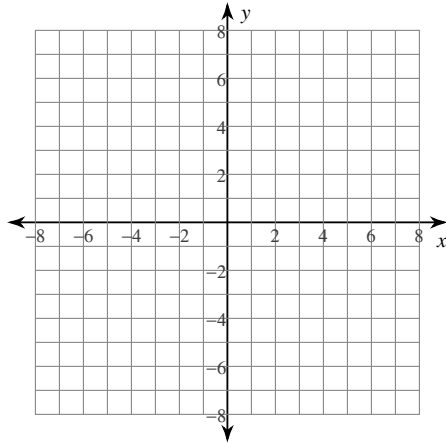
$$25) 6 + y = -2x^2$$



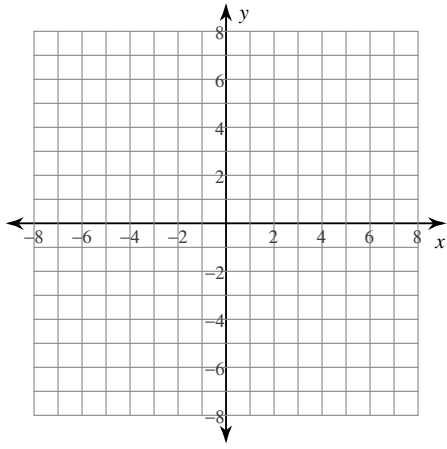
$$26) -x^2 + 6x + y - 5 = 0$$



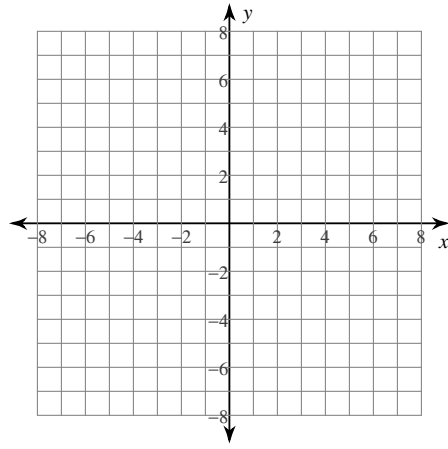
$$27) -16 = 8x + x^2 - y$$



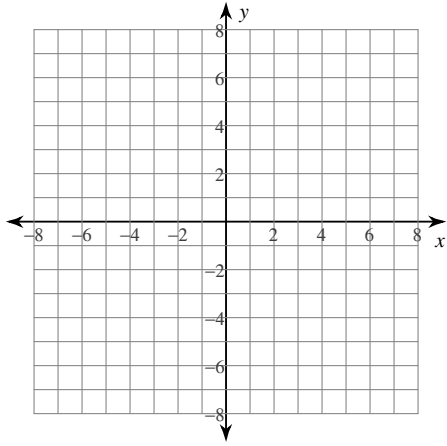
28)  $-x^2 + 4x + y - 5 = 0$



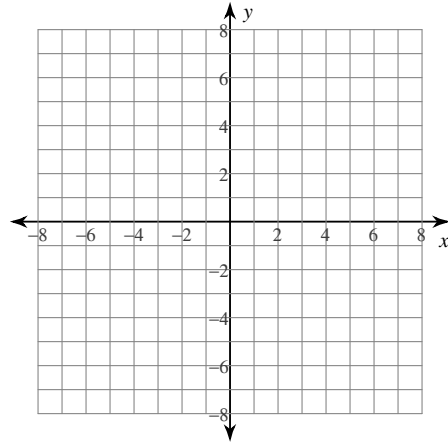
29)  $4y + 10x = -25 - x^2$



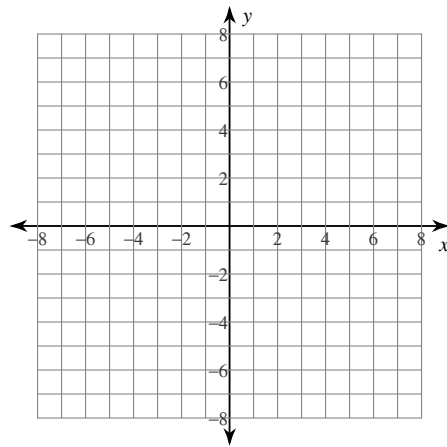
30)  $-23 + 10x = -y + x^2$



31)  $y = x^2 - 10x + 28$



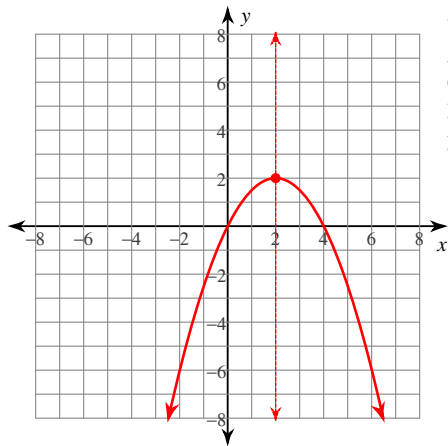
32)  $y + 4 = (x - 4)^2$



## Midterm Review

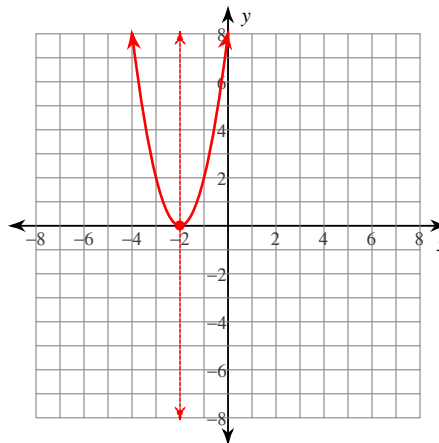
Identify the vertex, axis of symmetry, direction of opening, min/max value, and y-intercept of each. Then sketch the graph.

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



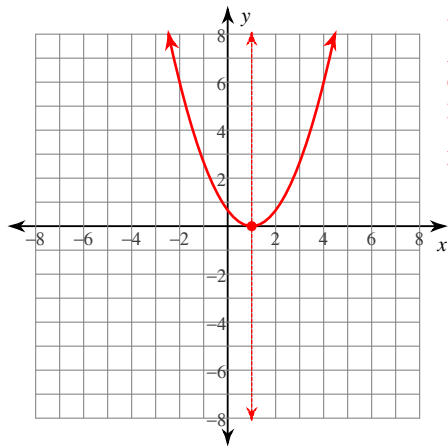
Vertex: (2, 2)  
 Axis of Sym.:  $x = 2$   
 Opens: Down  
 Max value = 2  
 y-int: 0

2)  $y = 2x^2 + 8x + 8$



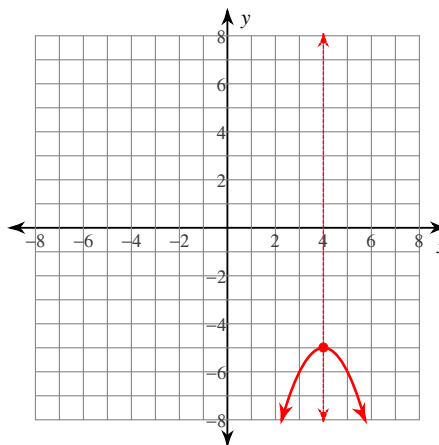
Vertex: (-2, 0)  
 Axis of Sym.:  $x = -2$   
 Opens: Up  
 Min value = 0  
 y-int: 8

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



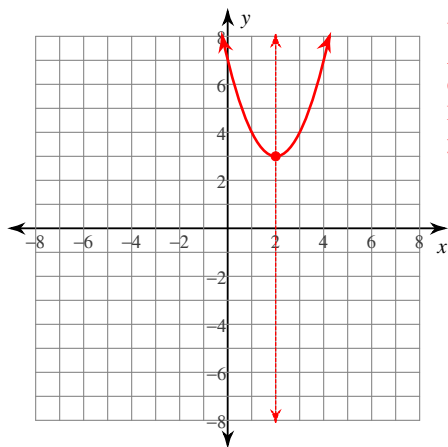
Vertex: (1, 0)  
 Axis of Sym.:  $x = 1$   
 Opens: Up  
 Min value = 0  
 y-int:  $\frac{2}{3}$

4)  $y = -x^2 + 8x - 21$



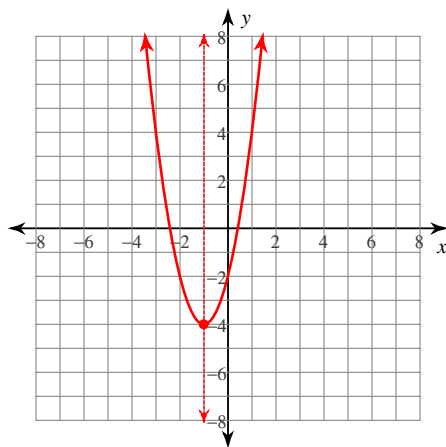
Vertex: (4, -5)  
 Axis of Sym.:  $x = 4$   
 Opens: Down  
 Max value = -5  
 y-int: -21

5)  $y = x^2 - 4x + 7$



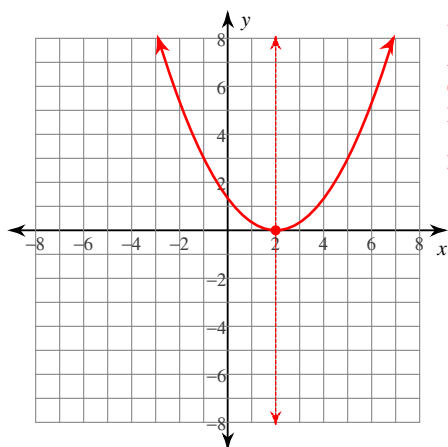
Vertex: (2, 3)  
 Axis of Sym.:  $x = 2$   
 Opens: Up  
 Min value = 3  
 y-int: 7

6)  $y = 2x^2 + 4x - 2$



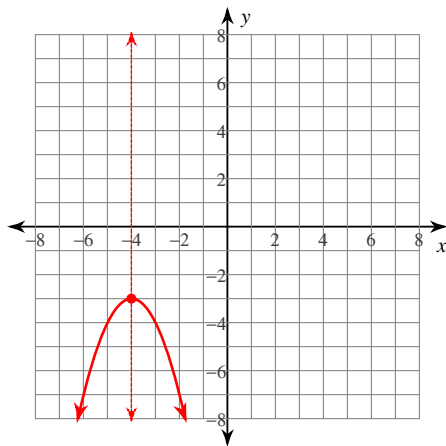
Vertex: (-1, -4)  
 Axis of Sym.:  $x = -1$   
 Opens: Up  
 Min value = -4  
 y-int: -2

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



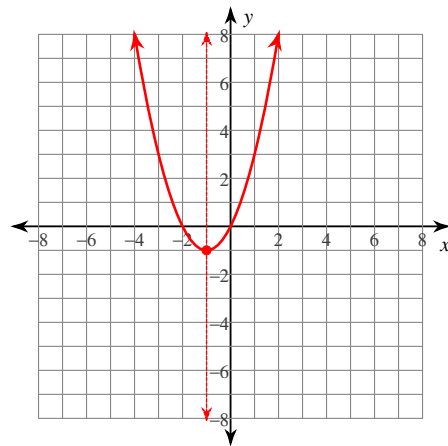
Vertex: (2, 0)  
 Axis of Sym.:  $x = 2$   
 Opens: Up  
 Min value = 0  
 y-int:  $\frac{4}{3}$

8)  $y = -x^2 - 8x - 19$



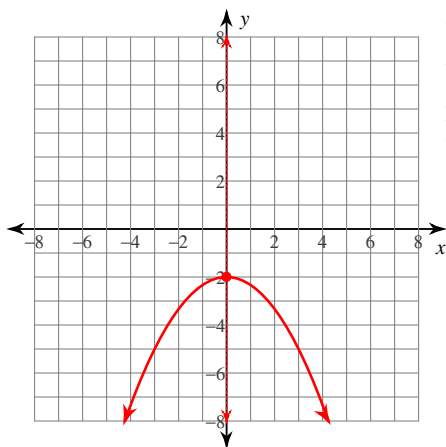
Vertex: (-4, -3)  
 Axis of Sym.:  $x = -4$   
 Opens: Down  
 Max value = -3  
 y-int: -19

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



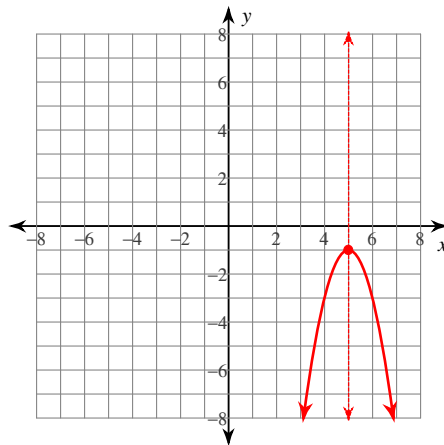
Vertex: (-1, -1)  
 Axis of Sym.:  $x = -1$   
 Opens: Up  
 Min value = -1  
 y-int: 0

$$10) y = -\frac{1}{3}x^2 - 2$$



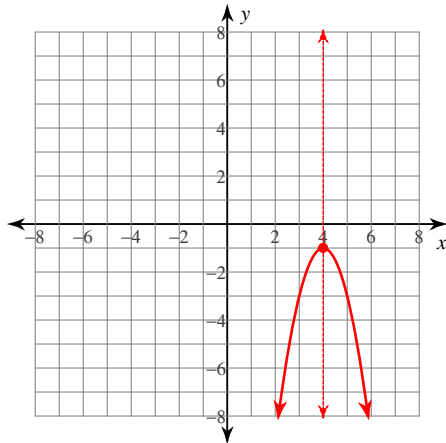
Vertex: (0, -2)  
 Axis of Sym.:  $x = 0$   
 Opens: Down  
 Max value = -2  
 y-int: -2

$$11) y = -2(x - 5)^2 - 1$$



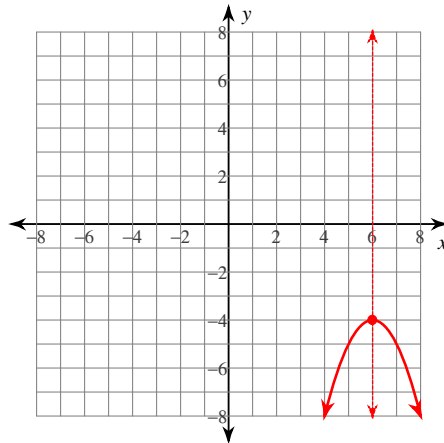
Vertex: (5, -1)  
 Axis of Sym.:  $x = 5$   
 Opens: Down  
 Max value = -1  
 y-int: -51

$$12) y = -2(x - 4)^2 - 1$$



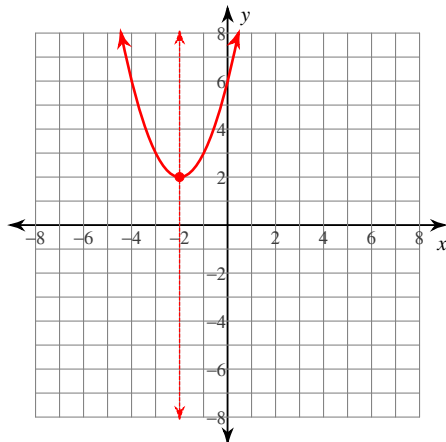
Vertex: (4, -1)  
 Axis of Sym.:  $x = 4$   
 Opens: Down  
 Max value = -1  
 y-int: -33

$$13) y = -(x - 6)^2 - 4$$



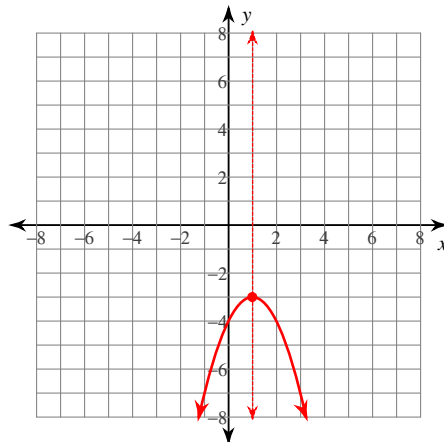
Vertex: (6, -4)  
 Axis of Sym.:  $x = 6$   
 Opens: Down  
 Max value = -4  
 y-int: -40

$$14) y = (x + 2)^2 + 2$$



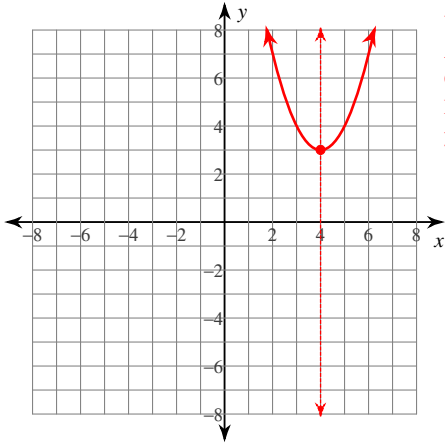
Vertex: (-2, 2)  
 Axis of Sym.:  $x = -2$   
 Opens: Up  
 Min value = 2  
 y-int: 6

$$15) y = -(x - 1)^2 - 3$$



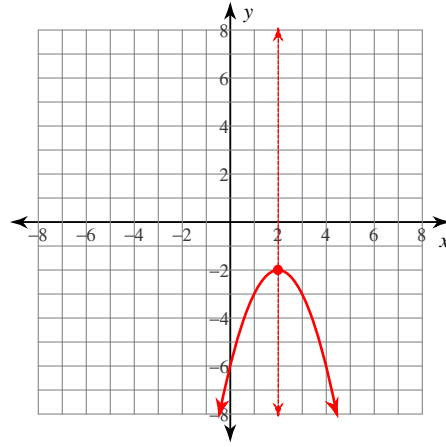
Vertex: (1, -3)  
 Axis of Sym.:  $x = 1$   
 Opens: Down  
 Max value = -3  
 y-int: -4

$$16) y = (x - 4)^2 + 3$$



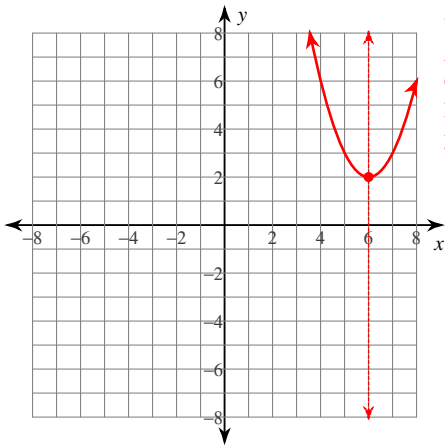
Vertex: (4, 3)  
 Axis of Sym.:  $x = 4$   
 Opens: Up  
 Min value = 3  
 y-int: 19

$$17) -(y + 2) = (x - 2)^2$$



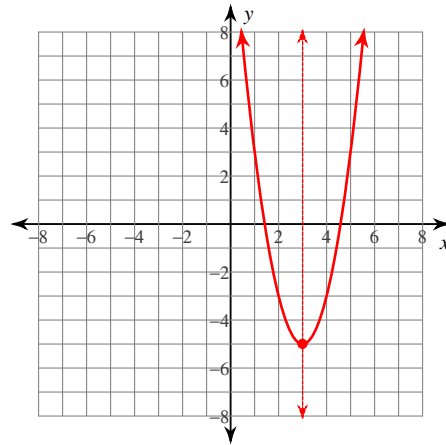
Vertex: (2, -2)  
 Axis of Sym.:  $x = 2$   
 Opens: Down  
 Max value = -2  
 y-int: -6

$$18) y - 2 = (x - 6)^2$$



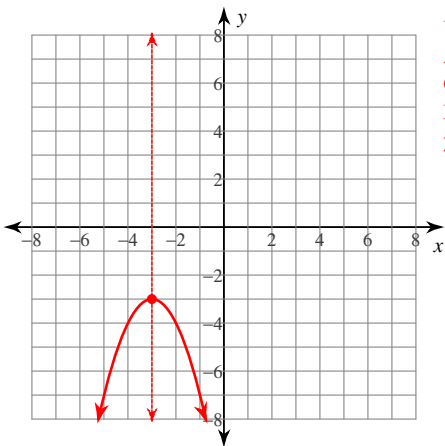
Vertex: (6, 2)  
 Axis of Sym.:  $x = 6$   
 Opens: Up  
 Min value = 2  
 y-int: 38

$$19) \frac{1}{2}(y + 5) = (x - 3)^2$$



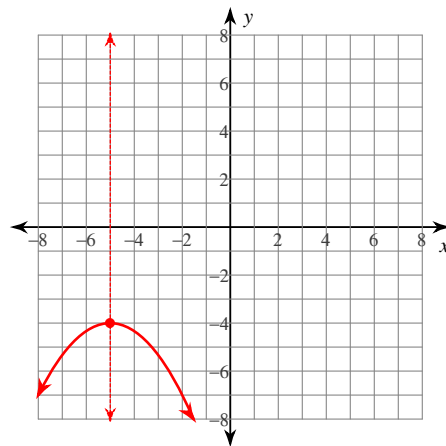
Vertex: (3, -5)  
 Axis of Sym.:  $x = 3$   
 Opens: Up  
 Min value = -5  
 y-int: 13

$$20) -(y + 3) = (x + 3)^2$$



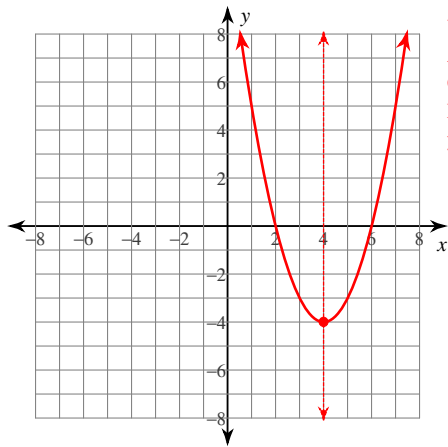
Vertex: (-3, -3)  
 Axis of Sym.:  $x = -3$   
 Opens: Down  
 Max value = -3  
 y-int: -12

$$21) -3(y + 4) = (x + 5)^2$$



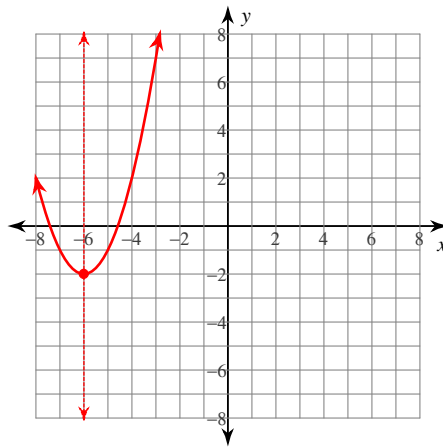
Vertex: (-5, -4)  
 Axis of Sym.:  $x = -5$   
 Opens: Down  
 Max value = -4  
 y-int:  $-\frac{37}{3}$

$$22) y + 4 = (x - 4)^2$$



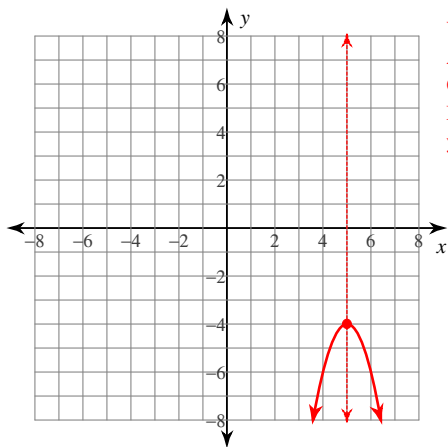
Vertex: (4, -4)  
 Axis of Sym.:  $x = 4$   
 Opens: Up  
 Min value = -4  
 y-int: 12

$$23) y + 2 = (x + 6)^2$$



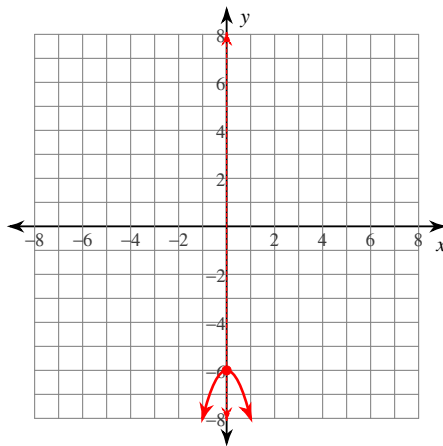
Vertex: (-6, -2)  
 Axis of Sym.:  $x = -6$   
 Opens: Up  
 Min value = -2  
 y-int: 34

$$24) -\frac{1}{2}(y + 4) = (x - 5)^2$$



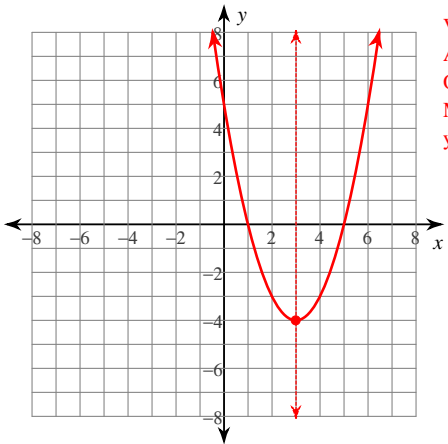
Vertex: (5, -4)  
 Axis of Sym.:  $x = 5$   
 Opens: Down  
 Max value = -4  
 y-int: -54

$$25) 6 + y = -2x^2$$



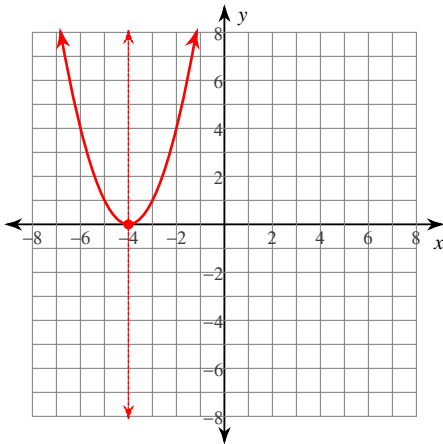
Vertex: (0, -6)  
 Axis of Sym.:  $x = 0$   
 Opens: Down  
 Max value = -6  
 y-int: -6

$$26) -x^2 + 6x + y - 5 = 0$$



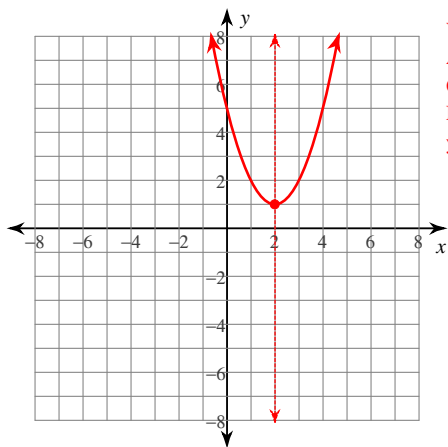
Vertex: (3, -4)  
 Axis of Sym.:  $x = 3$   
 Opens: Up  
 Min value = -4  
 y-int: 5

$$27) -16 = 8x + x^2 - y$$



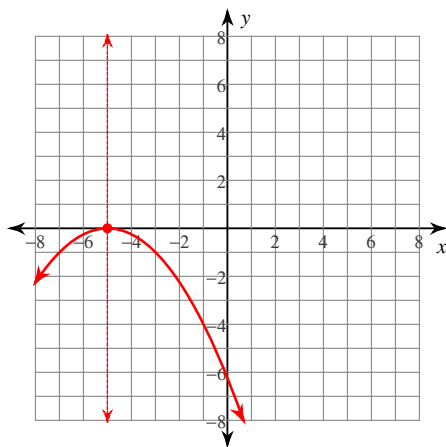
Vertex: (-4, 0)  
 Axis of Sym.:  $x = -4$   
 Opens: Up  
 Min value = 0  
 y-int: 16

28)  $-x^2 + 4x + y - 5 = 0$



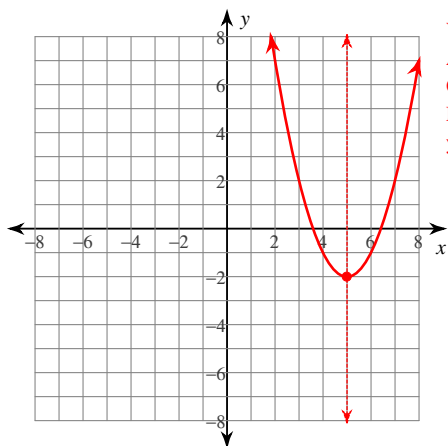
Vertex: (2, 1)  
 Axis of Sym.:  $x = 2$   
 Opens: Up  
 Min value = 1  
 y-int: 5

29)  $4y + 10x = -25 - x^2$



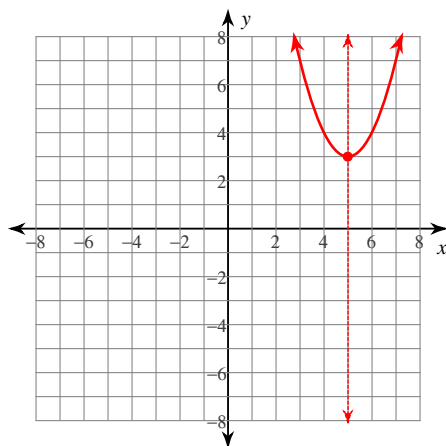
Vertex: (-5, 0)  
 Axis of Sym.:  $x = -5$   
 Opens: Down  
 Max value = 0  
 y-int:  $-\frac{25}{4}$

30)  $-23 + 10x = -y + x^2$



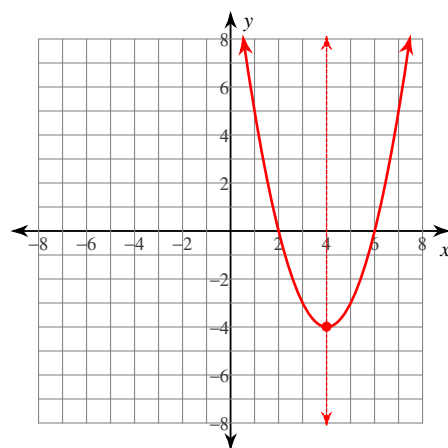
Vertex: (5, -2)  
 Axis of Sym.:  $x = 5$   
 Opens: Up  
 Min value = -2  
 y-int: 23

31)  $y = x^2 - 10x + 28$



Vertex: (5, 3)  
 Axis of Sym.:  $x = 5$   
 Opens: Up  
 Min value = 3  
 y-int: 28

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



Vertex: (4, -4)  
 Axis of Sym.:  $x = 4$   
 Opens: Up  
 Min value = -4  
 y-int: 12