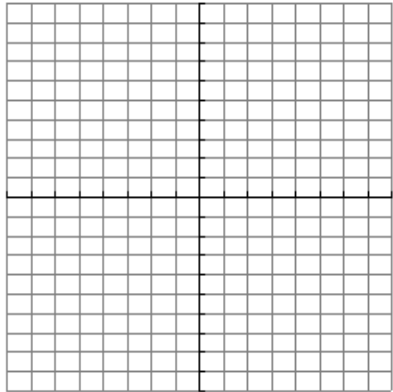
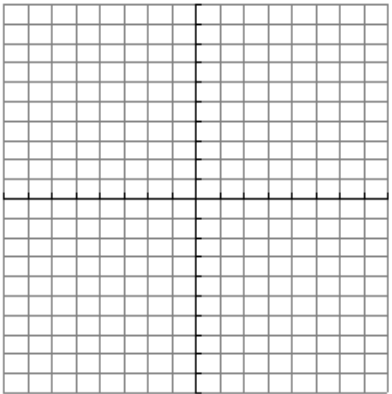


Given a quadratic function in the form  $y = f(x) = a(x-h)^2 + k$ ,

- The graph is always a parabola
- The vertex occurs at  $(h, k)$
- The direction of opening is upward if  $a > 0$  and downward if  $a < 0$
- The axis of symmetry is the vertical line with equation  $x = h$ .
- The y-intercept is found by substituting  $x = 0$  into the function and finding  $f(0)$
- The domain is  $(-\infty, \infty)$
- The range of the function can be determined from the graph

For each quadratic function below,

- State the coordinates of the vertex.
- State the direction of opening .
- Find the equation of the axis of symmetry.
- Find the y-intercept.
- Sketch the graph. **DO NOT USE YOUR CALCULATOR.**
- State the domain.
- State the range.

<p>1. <math>f(x) = (x-2)^2 - 9</math></p> <p>(a)</p> <p>(b)</p> <p>(c)</p> <p>(d)</p> <p>(e)</p>  <p>(f)</p> <p>(g)</p>	<p>2. <math>g(x) = -3(x+1)^2 - 6</math></p> <p>(a)</p> <p>(b)</p> <p>(c)</p> <p>(d)</p> <p>(e)</p>  <p>(f)</p> <p>(g)</p>
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3.  $h(x) = 2x^2 + 3$

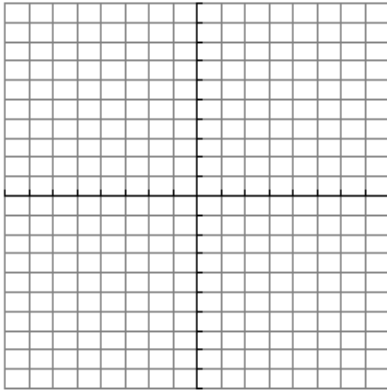
(a)

(b)

(c)

(d)

(e)



(f)

(g)

4.  $f(x) = 3(x-4)^2$

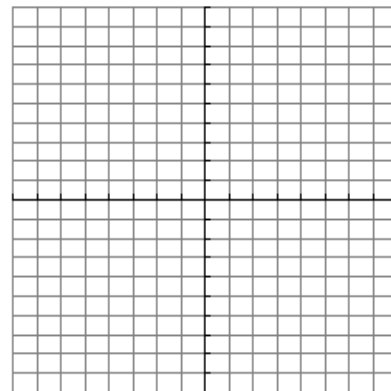
(a)

(b)

(c)

(d)

(e)



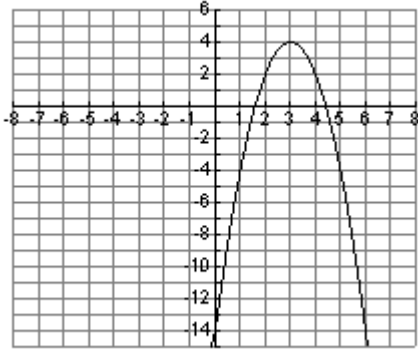
(f)

(g)

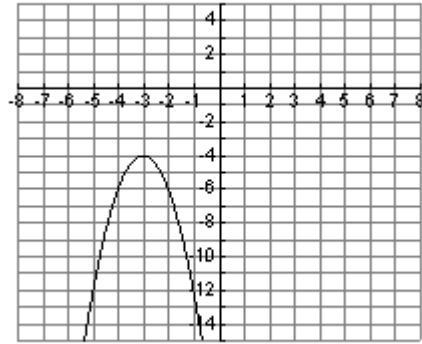
5. Match the equation with the corresponding graph from those shown below. **DO NOT USE YOUR CALCULATOR TO GRAPH THE FUNCTIONS.**

- (a)  $f(x) = 2(x+3)^2 - 4$       (b)  $f(x) = -2(x+3)^2 - 4$       (c)  $f(x) = 2(x-3)^2 + 4$   
 (d)  $f(x) = -2(x+3)^2 + 4$       (e)  $f(x) = -2(x-3)^2 + 4$       (f)  $f(x) = 2(x-3)^2 - 4$

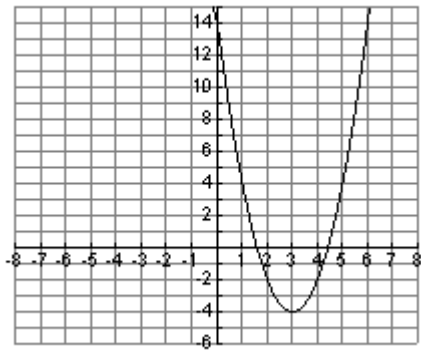
(i)



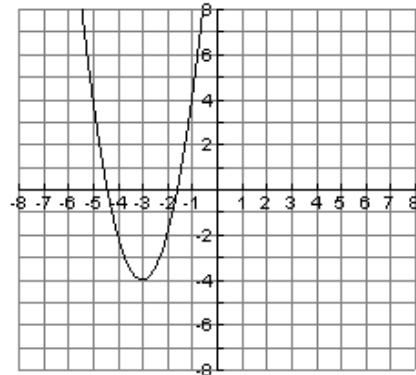
(ii)



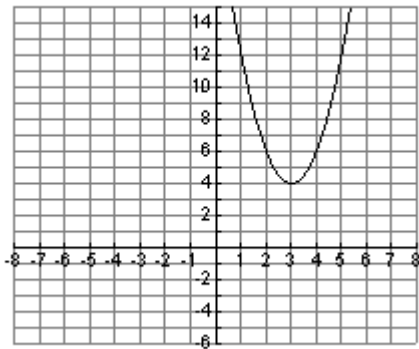
(iii)



(iv)



(v)



(vi)

