

Describe the transformation represented by each equation.

1. $y = (x - 3)^2 + 8$	2. $y = -(x + 7)^2 - 1$	3. $y = 2(x + 4)^2 + 3$
4. $y = -2(x - 9)^2 - 5$	5. $y = 3(x + 2)^2 - 7$	6. $y = -3(x - 1)^2 + 5$
7. $y = \frac{1}{4}(x + 3)^2 + 2$	8. $y = \frac{-1}{4}(x - 9)^2 + 5$	9. $y = \frac{1}{2}(x + 5)^2 - 3$
10. $y = 2(x - 4)^2$	11. $y = -(x + 8)^2$	12. $y = x^2 - 7$
13. $y = 2x^2 + 3$	14. $y = -3x^2 + 12$	15. $y = 2(x + 1)^2 - 7$

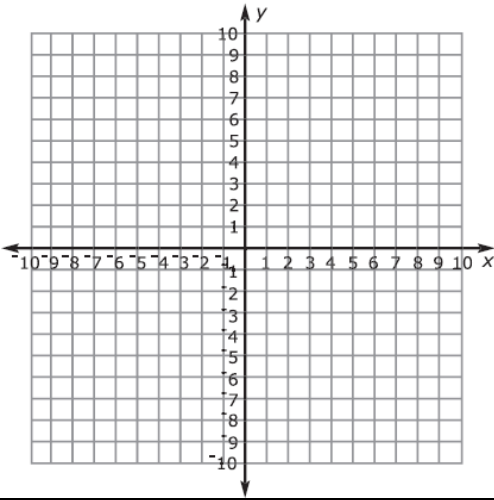
Calculate the vertex of the parabola given by each equation:

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

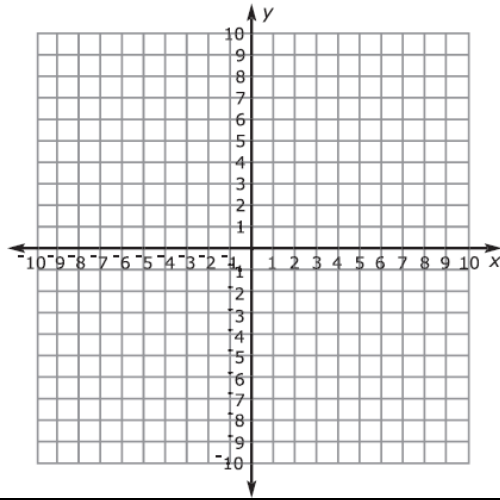
17.  $y = -x^2 - 8x + 10$

Graph each quadratic

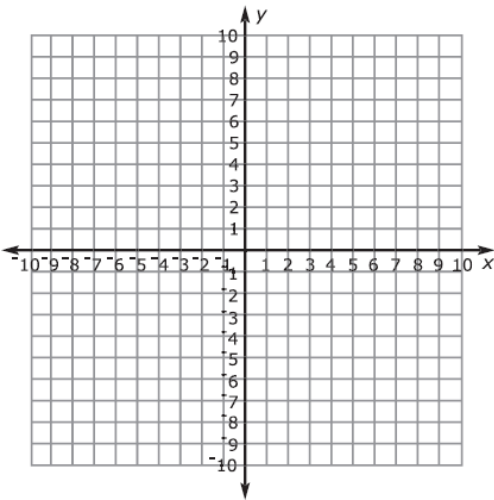
18.  $y = 2(x + 8)^2 - 4$



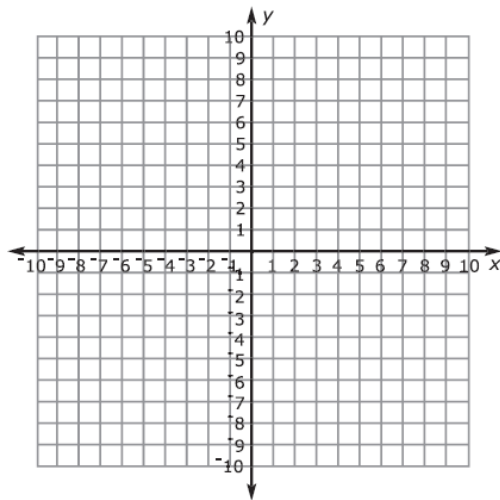
19.  $y = -(x + 8)^2$



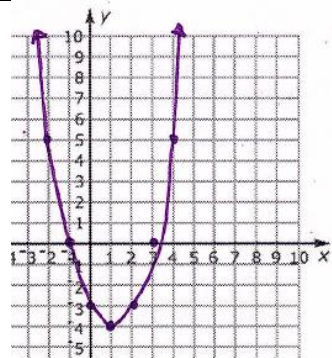
20.  $y = x^2 - 7$



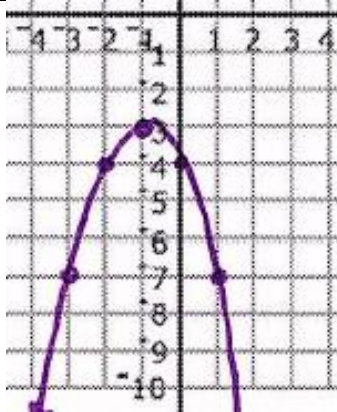
21.  $y = \frac{1}{2}(x + 5)^2 - 3$



Identify the following for each graph:



22. Vertex:  
Zeros:  
Axis of symmetry:  
Max/Min:  
Domain :  
Range:



23. Vertex:  
Zeros:  
Axis of symmetry:  
Max/Min:  
Domain :  
Range: