Name:_____ Date:_____
Algebra 2 Band:_____

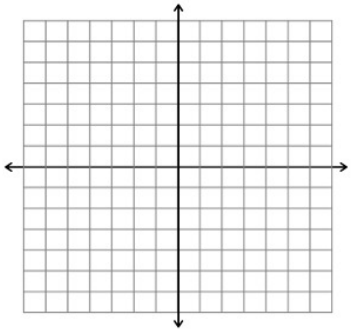
Quadratic Functions Study Guide

2.1 Transformations of Quadratic Functions

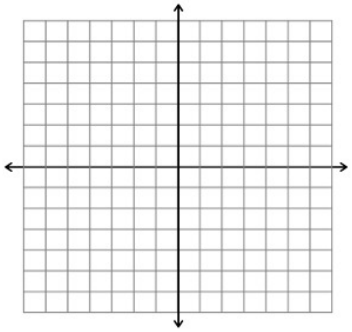
1. Let the graph of g be a translation 1 unit left and 2 units up of the function $f(x) = x^2 + 1$. Write a rule for g.

Describe the transformation of $f(x) = x^2$ represented by g. Then graph each function.

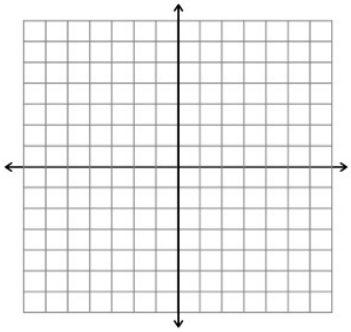
2. $g(x) = (x + 4)^2$



3. $g(x) = (x - 7)^2 + 2$



4. $g(x) = -3(x + 2)^2 - 1$



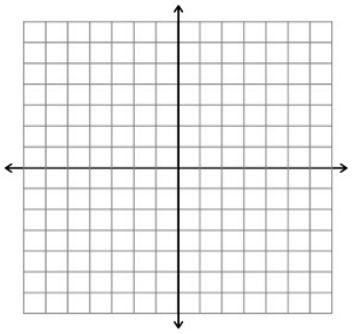
Write a rule for g.

5. Let g be a horizontal shrink by a factor of $\frac{2}{3}$, followed by a translation 5 units left and 2 units down of the graph of $f(x) = x^2$.

6. Let g be a translation 2 units left and 3 units up, followed by a reflection in the y-axis of the graph of $f(x) = x^2 - 2x$.

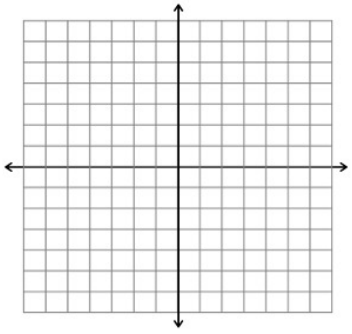
2.2 Characteristics of Quadratic Functions

7. Graph $f(x) = 2x^2 - 8x + 1$. Label the vertex and axis of symmetry.

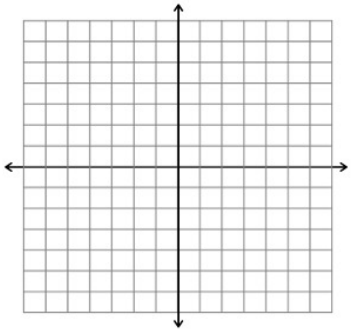


Graph the function. Label the vertex and axis of symmetry. Find the minimum or maximum value of f. Describe where the function is increasing and decreasing.

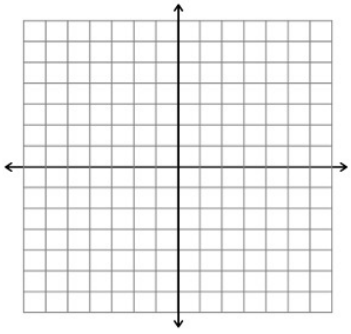
8. $f(x) = 3(x-1)^2 - 4$



9. $g(x) = -2x^2 + 16x + 3$

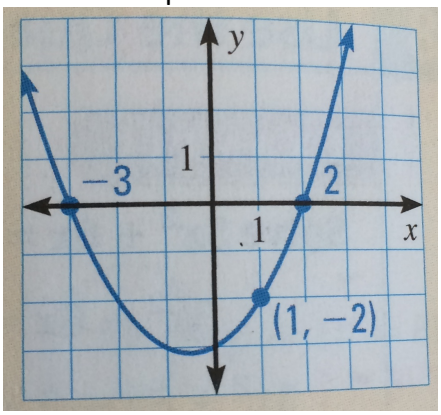


10. $h(x) = (x-3)(x+7)$



2.3 Writing Quadratic Functions

11. Write a quadratic function for the parabola shown.



Write a quadratic function whose graph has the given characteristics.

12. x-intercepts: $-3,2$
Passes through: $(3,12)$

13. passes through: $(5,2), (0,2), (8,-6)$

14. Vertex: $(2,7)$
Passes through: $(4,2)$