Algebra 2 Name _____

Homework 2.1 -2.2 Date _____ Per _____

1. The function $g(x) = (x + 2)^2 + 4$ is a transformation of the parent function $f(x) = x^2$. Which of the following statements are true? Select all that apply.

A. Function *g* is the result of *f* being translated right 2 units and down 4 units.
B. Function *g* is the result of *f* being translated left 2 units and up 4 units.
C. The graph of function *f* opens upward.
D. The graph of function *f* opens downward.
E. The graph of function *f* is compressed by a factor of 2.

2. What are the domain and range of the function $h(x) = -(x - 4)^2 + 3$?

3. What is the equation written **in vertex form** of a parabola with a vertex of (9, −1) that passes through (7, 7)? Then write that equation **in standard form**.

4. Function *g* is a transformation of the parent function $f(x) = x^2$. The graph of *g* is a translation right 3 units and down 5 units of the graph of *f*.

   What is the equation of function *g* written in standard form.

5. What is the vertex of the graph of the function $f(x) = x^2 - 4x + 3$ ?

6. Give the key features(**Vertex/Axis of Symmetry/Y-Intercept**) of the graph $f(x) = -x^2 - 2x + 3$

7. A pebble is tossed into the air from the top of a cliff. The height, in feet, of the pebble over time is modeled by the equation $y = -16x^2 + 32x + 80$. What is the maximum height, in feet, reached by the pebble? Show your work.

**8.** What is the equation of a parabola that passes through the points (−5, −10), (−3, 2), and (2, −3)? **Show all your work.**

9. Use the quadratic regression feature of your calculator to find the equation of a quadratic function that fits the given points.

| ***x*** | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| ***y*** | 29 | 42 | 62 | 38 |