Quadratic Functions Pretest –Math 2 Honors

1. Vocabulary: Define each word and give an example.
   a. Quadratic Function b. Zero (of a function) c. Complex Number
2. Find f(2) if $f(x) = 2x^2 – 3x + 1$
3. Solve $x^2 – 3x = 10$
4. Solve $x^2 + 81 = 0$
5. Solve the quadratic equation $-9x^2 + 12x – 4 = 0$ by **factoring**.
6. Solve by completing the square $x^2 – 10x + 18 = 0$
7. Solve using the quadratic formula $x^2 – 2x – 6 = 0$
8. Solve $6x^2 + 7x – 3 = 0$.
9. $3x^2 + 24 = – 6x$
10. Solve: $(3x – 1)^2 - 5(3x – 1) – 14 = 0$
11. Solve: $–1/3x^2 + x + 6 = 0$
12. The base parabola function is $y = x^2$. If the function is transformed and its new equation is $y = -2x^2 – 6x + 12$, identify the transformations of the base function, $y = x^2$.
13. Write $y = x^2 + 8x – 9$ in vertex form. Find the zeros and the vertex of the function.
14. Solve the quadratic inequalities:
    a. $9x^2 – 16 > 0$ b. $x^2 – 3x \geq 10$
15. Graph. Label all intercepts $y = –2x^2 – 8x – 6$
16. Graph the quadratic functions. **Label the vertex and axis of symmetry** on each graph. Use graph paper.
    a. $y = -x^2 + 1$ b. $y = (x – 2)^2 – 4$ c. $y = x^2 – 2x – 5$
17. From 1970 to 1990, the average cost of a new car, C (in dollars), can be approximated by the model $C(t) = 30.5t^2 + 4192$, where t is the number of years since 1970. During which year was the average cost of a new car $12,000?
18. The path of the football can be modelled by h(d) = -0.035d2 + 1.41d + 1 , where *d* is the distance (in yards) the football is kicked and *h* is the height (in yards) the football is kicked. If a punter kicked a 41-yard punt, find the maximum height of the football.