Algebra 2

Name _____

Chapter 2 Review

Block _____ Date _____

Graph each function.

1) $y = x^2 - 6x + 5$ a = _____ b = _____ c = _____

Opens: _____

AOS: _____

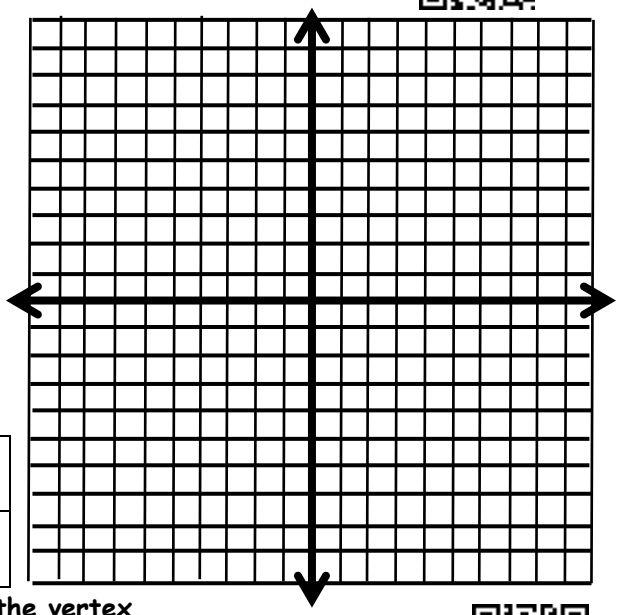
Vertex: _____

y - int: _____

Min/Max: _____

Zeros: _____

Domain: _____ Range: _____



x							
y							

Describe the transformation of each function, and identify the vertex.

2) $f(x) = -2(x - 8)^2 + 3$

3) $f(x) = (3x + 1)^2$

4) $f(x) = 4(x - 9)^2 - 1$

Use the description to write each quadratic function in vertex form, $f(x) = a(x - h)^2 + k$

5) The parent function $f(x) = x^2$ is reflected across the x - axis, compressed vertically by $\frac{1}{3}$, shifted right 7 units, and down 3 units.

Find the zeros of each function by factoring.

6) $5x^2 - 18x + 9 = 0$

7) $9x^2 + 12x = 0$

Write a quadratic function in standard form for each given set of zeros.

8) -8 and 11

9) 2 and 13

Simplify each square root. Express each number in terms of *i* if needed.

10) $2\sqrt{-18}$

11) $-\sqrt{-72}$

12) $\sqrt{120}$

Positive

Negative

Solve each equation by taking the square root.

13) $3x^2 + 81 = 0$

14) $6x^2 - 126 = 66$

Solve each equation by completing the square.

15) $x^2 - 2x + 4 = 0$

16) $9x^2 + 36x - 108 = 0$

Write each function in vertex form, and identify the vertex.

17) $x^2 + 16x + 71 = 0$

Vertex: _____

18) $x^2 - 6x - 13 = 0$

Vertex: _____

Find the zeros of each function by using the Quadratic Formula. $\frac{-b \pm \sqrt{b^2-4ac}}{2a}$

19) $f(x) = 3x^2 - 10x + 4$

a = _____ b = _____ c = _____

20) $f(x) = x^2 + 2x + 4$

a = _____ b = _____ c = _____

Find the value of the discriminant ($b^2 - 4ac$) of each function and determine the number of solutions for each equation.

21) $f(x) = x^2 + x + 4$

a = _____ b = _____ c = _____

22) $f(x) = -2x^2 + 3x + 1$

a = _____ b = _____ c = _____

23) $f(x) = 3x^2 + 6x + 3$

a = _____ b = _____ c = _____

Multiply complex numbers. Write the result in the form a + b*i*.

24) $(4 - 8i)(2 + 3i)$

25) $(-1 + 5i)^2$

Evaluate powers of *i*. (*** remember $i^2 = -1$)

26) i^{11} 27) i^{20} 28) i^{65} 29) i^{100}

Solve.

30) A rocket carrying fireworks is launched from a hill 80 feet above a lake. The rocket will fall into the lake after exploding at its maximum height. The rocket's height above the surface of the lake is given by $h(t) = -16t^2 + 64t + 80$

a) How long will it take for the rocket to reach its maximum height?

b) How high will the rocket be when it explodes?

c) How long will it take for the rocket to fall into the lake?

31) We are standing on the top of a 1680 feet tall building and throwing a small object upward. At every second, we measure the distance of the object from the ground. Exactly t seconds after we throw the object, its height (measured in feet) is $h(t) = -16t^2 + 256t + 1680$.

a) How long will it take for the object to reach its maximum height?

b) What is the object's maximum height?

c) How high will the object be after 10 seconds?

d) How long will it take for the object to reach the ground?