

Name: Key

Date: \_\_\_\_\_ Hr: \_\_\_\_\_

## Algebra II - Chapter 5 Practice Test

## Part I - Multiple Choice

B 1. Find the zero(s) of the function  $h(x) = x^2 - 8x + 15$  by factoring.  $(x-5)(x-3)$

- a.  $-5, -3$       b.  $5, 3$       c.  $-5, 3$       d.  $5, -3$

B 2. Solve the equation  $4x^2 = 64$ .  $x^2 = 16$   $x = \pm 4$

- a.  $-\frac{\sqrt{64}}{4}, \frac{\sqrt{64}}{4}$       b.  $4, -4$       c.  $4$       d.  $-\sqrt{16}, \sqrt{64}$

B 3. Write the function  $f(x) = x^2 + 6x + 5$  in vertex form, and identify its vertex.

- a.  $f(x) = (x+3)^2 + 14$   
vertex:  $(-3, -4)$
- $x^2 + 6x = -5$   
 $x^2 + 6x + 9 = -5 + 9$   
 $(x+3)^2 = 4$
- $(\frac{6}{2})^2$  b.  $f(x) = (x+3)^2 - 4$   
vertex:  $(-3, -4)$
- $(3)^2$

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

$$(-3, -4)$$

- ~~c.~~  $f(x) = (x+6)^2 + 2$   
vertex:  $(6, -4)$
- ~~d.~~  $f(x) = (x+6)^2 - 4$   
vertex:  $(6, -4)$
- ~~$x+3 = -2$~~   
 ~~$x = -5$~~

A 4. What is the complex conjugate of  $-5 + 6i$ ?

- a.  $-5 - 6i$       b.  $5 + 6i$       c.  $-5 + 6i$       d.  $\sqrt{61}$

B 5. Simplify  $i^{26}$   $(i^2)^{13} = (-1)^{13}$

- a.  $1$       b.  $-1$       c.  $i$       d.  $-i$

B 6. Find the absolute value of  $|5 - 2i|$ .  $\sqrt{(5)^2 + (-2)^2} = \sqrt{25 + 4} = \sqrt{29}$

- a.  $\sqrt{-10}$       b.  $\sqrt{29}$       c.  $3$       d.  $21$

B 7. Simplify:  $(3 - 2i) + (2 + i)$

- a.  $1 + 3i$       b.  $5 - i$       c.  $4i$       d.  $-5 + i$

C 8. Simplify:  $(1 - 2i)(1 + 5i)$   $1 + 5i - 2i - 10i^2$   $1 + 3i + 10$

- a.  $1 + 3i$       b.  $1 - 3i$       c.  $11 + 3i$       d.  $-9 + 3i$

A 9. Simplify:  $\frac{-1+2i}{3+i} \cdot \frac{3-i}{3-i} = \frac{-3+i+6i-2i^2}{9-i^2} = \frac{-3+7i+2}{9+1} = \frac{-1+7i}{10}$

- (a)  $-\frac{1}{10} + \frac{7}{10}i$       b.  $-\frac{1}{10} - \frac{1}{2}i$       c.  $-\frac{1}{2} + \frac{7}{10}i$       d.  $-\frac{1}{8} + \frac{7}{8}i$

D 10. Simplify:  $(5-6i) - (-3+4i) = (5+3) + (-6i-4i)$

- ~~a.  $2-2i$~~       ~~b.  $8-10i$~~       ~~c.  $2+2i$~~       (d)  $8-10i$

C 11. Find the number and type of solutions for  $-4x^2 + 10x - 3 = 0$

$a = -4$   
 $b = 10$   
 $c = -3$   
 $b^2 - 4ac = (10)^2 - 4(-4)(-3) = 100 - 48$

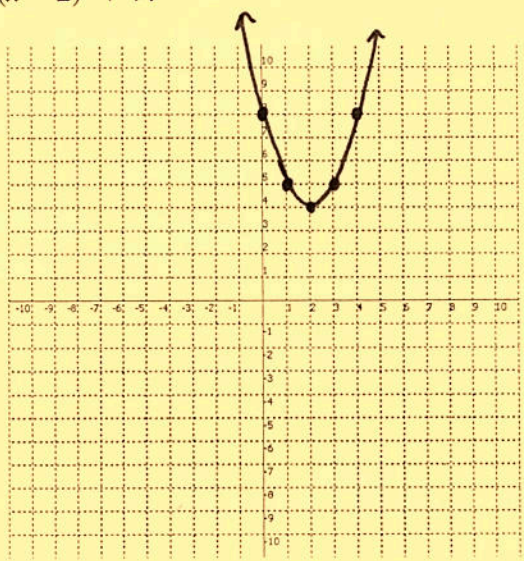
a. 1 real solution      b. No solutions      (c) 2 real solutions      ~~d. 2 complex solutions~~

Algebra II - Chapter 5 Test  
Part II - Short Answer

12. Fill in the table and graph the function  $g(x) = (x-2)^2 + 4$ .

x	y
0	8
1	5
2	4
3	5
4	8
5	13

$(0-2)^2 + 4 = 8$   
 $(1-2)^2 + 4 = 5$   
 $(5-2)^2 + 4 = 13$



13. Determine whether there is a minimum or maximum value of  $f(x) = 2x^2 + 16x - 6$ . Then identify the value.

$x = \frac{-b}{2a} = \frac{-16}{2 \cdot 2} = -4$

$2(-4)^2 + 16(-4) - 6 = 32 - 64 - 6 = -38$   
 $2(16) - 64 - 6 = 32 - 64 - 6 = -38$

Minimum or maximum? minimum      Value: -38

14. Determine the following information about the function  $f(x) = 2x^2 + 4x - 16$ :

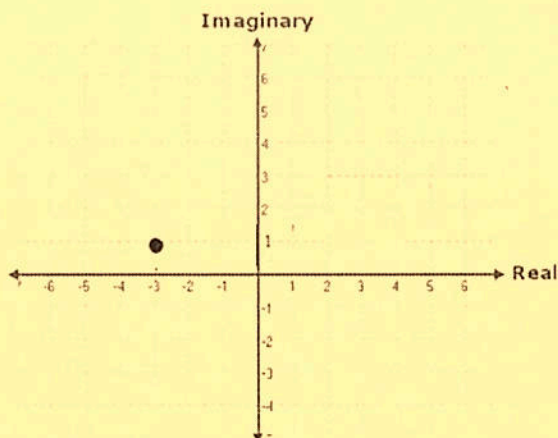
$x = \frac{-b}{2a} = \frac{-4}{2(2)} = -1$

Opens: Up or Down      Axis of symmetry:  $x = -1$

Vertex:  $(-1, -18)$       Y-Intercept:  $(0, -16)$

$2(-1)^2 + 4(-1) - 16 = 2 - 4 - 16 = -18$   
 $2(1) - 4 - 16 = 2 - 4 - 16 = -18$

15. Graph the complex number  $-3 + i$ .



16. Find the zero(s) of  $f(x) = x^2 - 9x + 3$  by using the Quadratic Equation.

$$x = \frac{9 \pm \sqrt{(-9)^2 - 4(1)(3)}}{2(1)}$$

$$x = \frac{9 \pm \sqrt{81 - 12}}{2}$$

$$x = \frac{9 \pm \sqrt{69}}{2}$$

$$x = \frac{9 \pm \sqrt{69}}{2}$$

Zero(s) \_\_\_\_\_

17. Describe the transformations of the following, from the parent function  $f(x) = x^2$

a.  $g(x) = x^2 - 1$

down one

b.  $h(x) = (x + 5)^2$

left five

c.  $j(x) = \frac{1}{2}(x - 2)^2$

wider

right 2

