

Note. There may be minor variations between the Microsoft Word and Adobe version and the html version of the review tests.

All the problems from Review Test 1 Plus the Following

III. Matching. Match the number with the appropriate letter. **5 points each.**

1. <u>ans</u> Two Real Roots	a) $b^2 - 4ac < 0$
2. <u>ans</u> Discriminant	b) $\frac{z_1 \cdot z_2}{z_2 \cdot z_2}$
3. <u>ans</u> Two Complex Roots	c) $b^2 - 4ac$
4. <u>ans</u> Complex Conjugate of $z = a + bi$	d) $ax^2 + bx + c = 0, a \neq 0$
5. <u>ans</u> ai	e) $\sqrt{-a}, a > 0$
6. <u>ans</u> Linear Equation	f) $ x  > a$
7. <u>ans</u> Quadratic Equation	g) $b^2 - 4ac > 0$
8. <u>ans</u> $-a < x < a$	h) $ax + b = 0, a \neq 0$
9. <u>ans</u> $x > a$ or $x < a$	i) $ x  < a$
10. <u>ans</u> Cubic equation	j) $a - bi$
11. <u>ans</u> Evaluation of quotient $\frac{z_1}{z_2}$	

IV. Fill in the blank. **5 points each**

- Evaluate **exactly**  $|3.33 - \sqrt{10}| =$  \_\_\_\_\_.
- $ab = 0$  if and only if \_\_\_\_\_.
- The quadratic formula is \_\_\_\_\_.
- If  $a < b$ , then  $a + c$  \_\_\_\_\_  $b + c$ .
- A quadratic equation is an equation equivalent to one in which the highest power is \_\_\_\_\_.
- The discriminant of the quadratic equation  $ax^2 + bx + c$  is given by \_\_\_\_\_.
- If the discriminant is positive, then the quadratic equation has \_\_\_\_\_ real roots.
- If  $-x$  is positive, then  $|x| =$  \_\_\_\_\_.
- If the discriminant is negative, then the quadratic equation has \_\_\_\_\_ real roots.
- If  $a < b$  and  $c < d$ , then  $a + c$  \_\_\_\_\_  $b + d$ .
- If  $a < b$  and  $0 < c$ , then  $ac$  \_\_\_\_\_  $bc$ .

12. If  $a < b$  and  $c < 0$ , then  $ac$  \_\_\_\_\_  $bc$ .
13. If  $a < 0$ , then  $|a| =$  \_\_\_\_\_.
14. If  $a > 0$  and  $|x| < a$ , then \_\_\_\_\_.
15. The midpoint of  $(6, 10)$  and  $(7, -14)$  is \_\_\_\_\_.
16. 20 is \_\_\_\_\_ percent of 50?
17. 5% of 200 is \_\_\_\_\_?
18. 16 is 4 percent of \_\_\_\_\_

V. Problems. Show all work when applicable 5 points each

1. In the quadratic equation  $3x^2 - 7x + 6 = 0$ , if  $a$ ,  $b$ , and  $c$  denote the Coefficients of the second, first and zeroth powers respectively, what are  $a$ ,  $b$  and  $c$  equal to? (Use this quadratic equation to answer next two problems)
2. Compute the discriminant for the equation  $3x^2 - 7x + 6 = 0$ .
3. How many real roots does the equation  $3x^2 - 7x + 6 = 0$ ?
4. Solve  $2(1-x) = 3(1+2x) + 5$ .
5. Solve  $(2x - 3)(x - 5) = 0$ .
6. Solve  $x^2 = 49$
7. Solve  $3x - 11 < 4$
8. Solve  $|3x| = 21$
9. Multiply  $(3 + 4i)(3 - 4i)$
10. Add  $(2 - 3i)$  and  $(4 - 7i)$
11. Compute the distance from the point  $(-3, 2)$  to  $(1, 5)$ .

VI. Problems. Show all work. Find all solutions. **10 points each. Answer on separate paper.**

12.  $\frac{1}{x} = \frac{4}{3x} + 7$

13. Find the reciprocal of  $5 - 4i$

14.  $x^2 - 21 = 4x$

15.  $x^2 - 21 > 4x$

16.  $|2x - 3| = 5$

17.  $2x^2 + 8x + 4 = 0$

18. Set up. Wendy took a trip from Davenport to Omaha, a distance of 300 miles. She traveled part of the way by bus and arrived at the train station just in time to complete her trip by train. The bus averaged 40 mph and the train averaged 60 mph. The entire trip took 5.5 hours. How long did she spend on the train?

19. Set up. What quantity of a 60% acid solution must be mixed with a 30% acid solution to produce 300 mL of a 50% solution?