

Due 10/17/11

Test Review 5.5, 5.6, 5.7, 5.9

Algebra 2

Name

Key

Simplify. Express each number in terms of i .

1. $\sqrt{-27} = i\sqrt{27} = i\sqrt{3 \cdot 9} = \boxed{3\sqrt{3}i}$

2. $\sqrt{-48} = i\sqrt{48} = i\sqrt{3 \cdot 16} = \boxed{4\sqrt{3}i}$

Solve each equation.

3. $x^2 = -256$ $\boxed{\pm 16i}$

4. $4x^2 + 144 = 0$ $\boxed{\pm 6i}$

Find each complex conjugate.

5. $\sqrt{13} + 9i$ $\boxed{\sqrt{13} - 9i}$

6. $-11 + 45i$ $\boxed{-11 - 45i}$

Find the value of the discriminant ($b^2 - 4ac$), the number of solutions, and the type of solutions.

7. $-x^2 - 5x + 6 = 0$

8. $4x^2 - 5x - 6 = 0$

9. $x^2 - 6x + 9 = 0$

$\boxed{49 \text{ 2 REAL}}$

$\boxed{121 \text{ 2 REAL}}$

$\boxed{0 \text{ 1 DOUBLE REAL}}$

Find the zeros of the function by using the Quadratic Formula.

10. $x^2 - 3x - 10 = 0$
 $a = 1$
 $b = -3$
 $c = -10$

$$\frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-10)}}{2(1)}$$

$$\boxed{x = -2 \mid x = 5}$$

11. $x^2 - 16 = 0$
 $a = 1$
 $b = 0$
 $c = -16$

$$\frac{-0 \pm \sqrt{(0)^2 - 4(1)(-16)}}{2(1)}$$

$$\boxed{x = \pm 4}$$

12. $4x^2 + 4x = 15$
 $a = 4$
 $b = 4$
 $c = -15$

$$\frac{-4 \pm \sqrt{4^2 - 4(4)(-15)}}{2(4)}$$

$$\boxed{x = -\frac{5}{2} \mid x = \frac{3}{2}}$$

13. $x^2 - 16x + 64 = 0$
 $a = 1$
 $b = -16$
 $c = 64$

$$\frac{-(-16) \pm \sqrt{(-16)^2 - 4(1)(64)}}{2(1)}$$

$$\boxed{x = 8}$$

Determine whether the ordered pair is a solution of the inequality. Show your work

14. $y < x^2 - 2x + 4$, $(2, 1)$
 $1 < (2)^2 - 2(2) + 4$
 $1 < 4$ $\boxed{\text{YES}}$

15. $y > 2x^2 + x - 5$, $(-2, 0)$
 $0 > 2(-2)^2 + (-2) - 5$
 $0 > 1$ $\boxed{\text{NO}}$

16. $y \leq 2x^2 + 5x + 6$, $(2, -4)$
 $-4 \leq 2(2)^2 + 5(2) + 6$
 $-4 \leq 24$ $\boxed{\text{YES}}$

Solve each quadratic inequality algebraically, then graph the solution on a number line.

17. $x^2 - 11x + 13 < 25$
 $x^2 - 11x - 12 = 0$
 $x = -1 \mid x = 12$

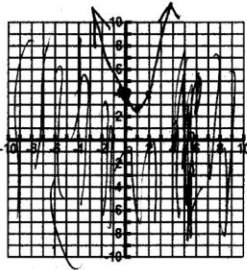
18. $x^2 - 5x - 24 \geq 0$
 $x^2 - 5x - 24 = 0$
 $x = -3 \mid x = 8$

19. $x^2 - 5x + 3 \leq 3$
 $x^2 - 5x = 0$
 $x = 0 \mid x = 5$

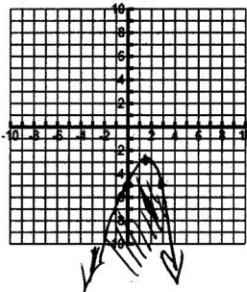
Key

Graph each quadratic inequality.

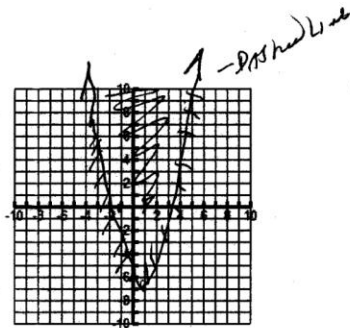
20. $y \leq x^2 - 2x + 4$



21. $y \leq -x^2 + 3x - 5$



22. $y > 2x^2 - 3x - 6$



Determine the Absolute Value of the Complex Number.

23. $|4 - 5i| = \sqrt{41}$

24. $|45i| = 45$

25. $|-1 - i| = \sqrt{2}$

Add and Subtract the Complex Number.

26. $(2 + 4i) + (3 - 2i)$

$5 + 2i$

27. $(-5 - 6i) + (1 - 12i)$

$-4 - 18i$

28. $(-8 - 3i) - (-6 - 7i)$

$-2 + 4i$

Multiply or simply the complex number.

29. $(2 + 2i)(4 - i)$

$10 + 6i$

33. $(4 + 3i)^2$

$7 + 24i$

31. $\frac{5 - 2i}{3 + i}$

$\frac{13}{10} - \frac{11i}{10}$