Algebra II Second Semester Practice Final Exam

1. Simplify $\left(3x^0y^{-4}\right)\left(2x^2y\right)^3$ _____

2. Simplify $\frac{7y^4z^2}{21y^9}$ _____

3. Express 70,000,000 in scientific notation. _____

4. Simplify $\left(3a^3-7a^2+a\right)-\left(6a^3-4a^2-8\right)$ _____

5. Simplify $7x\left(4x^2-3y\right)$ _____

6. Simplify $\left(x^2+12x+35\right)\div\left(x+5\right)$ _____

7. Factor $m^2+10m+16$ completely. _____

8. Factor $x^3-4x^2+3x-12$ completely _____

9. Factor $x^2 - 25$ completely. _____

10. Factor $2x^2 + 13x - 7$ completely. _____

11. Simplify $\sqrt{196}$ _____

12. Use a calculator to approximate $\sqrt{341}$ to three decimal places. _____

13. Simplify $\sqrt{80}$ _____

14. Simplify $\left(4+\sqrt{5}\right)\left(6-\sqrt{5}\right)$ _____

15. Simplify $\sqrt{98}-\sqrt{72}+\sqrt{32}$ _____

16. Simplify $\sqrt[3]{216x^{12}}$ _____

17. Write the expression $x^{\frac{3}{7}}$ in radical form. _____

18. Evaluate $125^{\frac{1}{3}}$ _____

19. Solve $\sqrt{4x+1}=3$ _____

20 Solve $\sqrt{x+7}+8=3$ _____

21. Simplify $\sqrt{-25}$ _____

22. Simplify $(-8+7i)+(22-11i)$ _____

23. What is the equation of the axis of symmetry of $y = x^2 + 16x + 20$? _____

24. The graph of $f(x) = -5x^2 + x$ opens _____ and

has a _____ value. _____

25. Solve $x^2 - 9x - 22 = 0$ _____

26. Solve $3x^2 - 6x = 0$ _____

27. Which quadratic has roots $-\frac{1}{3}, -3$? _____

28. Find the value of c that makes $x^2 + 12x + c$ a perfect square. _____

29. Find the exact solutions to $x^2 + 3x + -3 = 0$ by using the quadratic formula. _____

30. Use the value of the discriminant to determine the number and

type of roots for $x^2 - 16x + 4 = 0$. _____

31. Use the value of the discriminant to determine the number and

type of roots for $x^2 - x + 6 = 0$. _____

32. Factor x^3+8 completely _____

33. Simplify $\frac{18}{6-\sqrt{2}}$ _____

34. Multiply (x+5)(x-7) _____

35. Simplify $(3x+8)^2$ _____

Answer Key

1. $\frac{24x^6}{y}$

2. $\frac{z^2}{3y^5}$

3. 7×10^7

4. $-3a^3-3a^2+a+8$

5. $28x^3-21xy$

6. x+7

7. $(m+8)(m+2)$

8. $(x^2+3)(x-4)$

9. $(x-5)(x+5)$

10. $(2x-1)(x+7)$

11. 14

12. 18.466

13. $4\sqrt{5}$

14. $19+2\sqrt{5}$

15. $5\sqrt{2}$

16. $6x^4$

17. $\sqrt[7]{x^3}$

18. 5

19. 2

20. No Solution

21. 5i

22. 14 – 4i

23. x = -8

24. down, maximum

25. 11, -2

26. 0, 2

27. $3x^2 + 10x + 3 = 0$

28. 36

29. $\frac{-3 \pm \sqrt{21}}{2}$

30. 2 real irrational roots

31. 2 complex roots

32. $(x+2)(x^2 - 2x + 4)$

33. $\frac{54 + 9\sqrt{2}}{17}$

34. $x^2 - 2x - 35$

35. $9x^2 + 48x + 64$