Name: _____ Date: _____ Period: _____

Algebra II Fourth Six Weeks Exam Study Guide

Show ALL work and solutions on SEPARATE PAPER. No work = no credit!!!

There will be 25 questions on this test, 4 points each; about 30% of the test will be over Chapter 6 material, so be sure to review that material as well.

Find each real number root.

1. $\sqrt{-144}$
2. $-\sqrt[3]{27}$
3. $\sqrt{64}$

Simplify each expression.

4. $\sqrt{5x^4y^3} \bullet \sqrt{45x^3y}$
5. $\dfrac{\sqrt[3]{81a^8b^5}}{\sqrt[3]{3a^2b}}$
6. $\sqrt{7x^3} \bullet \sqrt[4]{14x}$

Rationalize all denominators.

7. $\dfrac{\sqrt{2a^7b^2}}{\sqrt{3b^3}}$
8. $\dfrac{\sqrt[3]{5}}{\sqrt[3]{x^4}}$
9. $\dfrac{1-\sqrt{3x}}{\sqrt{6x}}$

Simplify each expression.

10. $2\sqrt[4]{2x} + 6\sqrt[4]{2x}$
11. $11\sqrt[3]{4xy} - 9\sqrt[3]{4x^2y}$
12. $(5+\sqrt{3})(2-\sqrt{3})$
13. $\sqrt{2x} - \sqrt{8x} + \sqrt{18x}$
14. $36^{\frac{3}{2}}$
15. $\left(x^{\frac{3}{4}}\right)^{\frac{4}{3}}$

Rationalize the denominator.

16. $\dfrac{1-\sqrt[3]{2}}{\sqrt[3]{5}}$

Solve each equation.

17. $\sqrt{x+7} + 4 = 1$
18. $(3x+1)^{\frac{2}{3}} = 4$

Let f(x) = 2x + 5 and g(x) = x^2 – 3x + 2. Find:

19. $-2f(x) - g(x)$
20. $g(x) \bullet f(x)$
21. $(f \circ g)(-2)$

Find the inverse of each function.

22. $y = 2x^3 + 1$
23. $y = \dfrac{1}{2}x^2 - 7$

Write each polynomial in standard form. Then classify by degree and number of terms.

24. $3x + 2x^2 - x + 4x^3$

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Use either long division and synthetic division to divide:

25. $(x^3 + 3x^2 - 2x - 4) \div (x - 2)$

Use synthetic division and the Remainder Theorem to find P(a).

26. $P(x) = 5x^4 - x^2 + 1; a = -2$

Factor the expressions completely.

27. $x^3 - 8 = 0$

28. $4x^3 - 20x^2 + 16x$

Find all the roots of:

29. $x^3 - 6x^2 + 11x - 6 = 0$

Find all the roots of:

30. $x^3 - 3x^2 + x + 5 = 0$

Evaluate:

31. ${}_4P_3$

32. In how many ways can you arrange 5 different canisters in a row on a shelf?

33. How many different three-student study groups can be selected from a class of 15?

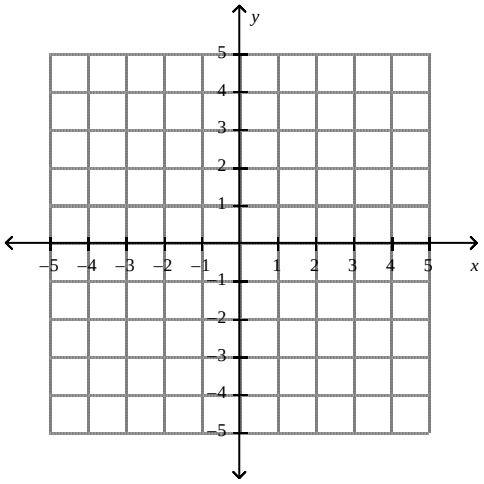
Use Pascal's Triangle to expand:

34. $(1 - 2t)^2$

35. $(2x + 3z)^4$

Graph each function.

36. $y = \sqrt{x + 3} - 2$



37. $y = \sqrt[3]{x + 4} - 1$