Algebra II - 4th Six Weeks Exam Review (Chapters 6 & 7)

In case you get stuck *(and can't find a math teacher nearby)*, each problem has a *(page # and example #)* to refer to in your textbook. Please do all work <u>on separate paper</u>. NO LATE REVIEWS ACCEPTED.

1. Classify $-7x^5 - 6x^4 + 4x^3$ by degree and by number of terms. *(Pg. 313, example 1)*
2. Saru wrote the formula $w(w - 1)(5w + 3)$ for the volume of a rectangular prism he is designing, with width w, which is always has a positive value greater than 1. Find the product and then classify this polynomial by degree and by number of terms. *(Pg. 313, example 1)*
3. Write $6x^3 - 48x^2 + 72x$ in factored form. *(Pg. 320, example 2)*
4. Divide using synthetic division: $(x^4 - 16x^3 - 55x^2 - 10x - 48) \div (x + 3)$ *(Pg. 328, example 3)*

Factor the expression. *(Pg. 334, example 3)*

5. $x^3 + 64$
6. $c^3 - 512$

Find the roots of the polynomial equation. *(Pg. 348, example 2)*

7. $x^3 - 2x^2 + 10x + 136 = 0$
8. $x^4 - 5x^3 + 11x^2 - 25x + 30 = 0$
9. A polynomial equation with rational coefficients has the roots $5 + \sqrt{2}, 7 - \sqrt{2}$. Find two additional roots. *(Pg. 343, example 3)*
10. For the equation $5x^6 + 5x^2 - 6 = 0$, find the number of complex roots and the possible number of real roots. *(Pg. 348, example 1)*

Use Pascal's Triangle to expand the binomial. *(Pg. 360, examples 1 and 2)*

11. $(4x + 3)^4$
12. $(d - 2b)^3$

Find the real-number root. *(Pg. 376, example 1)*

13. $\sqrt{0.81}$
14. $\sqrt{-2.56}$
15. The formula for the volume of a sphere is $V = \frac{4}{3}\pi r^3$. Find the radius, to the nearest hundredth, of a sphere with a volume of 13 in.^{3}.

Simplify each radical expression. Assume that all variables are positive. *(Pg. 377, example 3)*

16. $\sqrt[3]{54a^{10}b^{12}}$
17. $\sqrt[3]{128a^7b^9}$
18. **Multiply and simplify** $\sqrt[3]{9x^4} \cdot \sqrt[3]{8x^2}$. *(Pg. 381, example 3)*

Divide and simplify. Assume that all variables are positive. *(Pg. 382, example 4)*

19. $\frac{\sqrt[3]{108x^{28}}}{\sqrt[3]{2x}}$
20. $\frac{\sqrt{90x^{18}}}{\sqrt{2x}}$

Rationalize the denominator of the expression. Assume that all variables are positive. *(Pg. 382, example 5)*

21. $\frac{\sqrt[3]{3}}{\sqrt[3]{4}}$
22. $\frac{\sqrt{5x^{12}y^{11}}}{\sqrt{3x^6y^2}}$
23. $\frac{4 + \sqrt[3]{6}}{\sqrt[3]{3}}$

24. A math classroom has width $\sqrt{15}$ and length $5\sqrt{15}$. What is the perimeter of the classroom in simplest radical form?

Simplify. *(Pg. 387, example 3)*

25. $-\sqrt{10} - 6\sqrt{25} + 5\sqrt{10}$

Multiply. *(Pg. 387, example 4)*

26. $\left(7 - \sqrt{2}\right)\left(8 + \sqrt{2}\right)$

27. $\left(-5 - \sqrt{3}\right)^2$

Write each exponential equation in radical form. *(Pg. 392, example 2)*

28. $9x^{\frac{9}{4}}$

29. $10x^{\frac{5}{3}}$

Solve. Check for extraneous solutions. *(Pg. 399, example 4)*

30. $6x = \sqrt{24 + 12x}$

31. $3x = \sqrt{15 - 6x}$

Solve the equation. *(Pg. 398, example 2)*

32. $(x + 8)^{\frac{2}{5}} = 4$

33. $2(5 - x)^{\frac{2}{3}} - 7 = 25$

34. For $h(x) = 2x^2 + 6x - 9$ and $k(x) = 3x^2 - 8x + 8$, find $h(x) - 2k(x)$. *(Pg. 404, example 1)*

35. Let $f(x) = -2x - 4$ and $g(x) = 3x + 5$. Find $(f \circ g)(3)$. *(Pg. 405, example 3)*

36. Let $f(x) = -4x + 5$ and $g(x) = -2x - 3$. Find $(f \circ g)(-5)$. *(Pg. 405, example 3)*

37. Find the inverse of $y = 7x^2 - 3$. *(Pg. 413, example 2)*

Graph each function AND its inverse. *(Pg. 421, examples 1, 2, & 4, AND pg. 414, example 3)*

38. $y = \sqrt{x} + 1$

39. $y = \sqrt{x + 3}$

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