Algebra II - Chapter 7 Exam Review

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 on separate paper. REVIEWS REQUIRED FOR RETEST ELIGIBILITY. NO LATE REVIEWS ACCEPTED.

- 1. Divide using synthetic division: $(x^4 + 15x^3 77x^2 + 13x 36) \div (x 4)$ (ex. 3, p.328)
- 2. Zach wrote the formula w(w 1)(5w + 4) 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. *(example 1, p.313)*
- 3. Find the roots of the polynomial equation: $x^3 2x^2 + 10x + 136 = 0$ (ex. 2, p.342)
- 4. For the equation $2x^4 5x^3 + 10 = 0$, find the number of complex roots and the possible number of real roots. *(ex. 1, p.348) (ex. 1 & 2, p.376)*
- 5. Find all the real square roots of $-\frac{9}{16}$. 6. Find the real number root. $\sqrt[3]{-\frac{125}{343}}$

Simplify the radical expression. Use absolute value symbols if needed. (ex. 3, p.376)

- 7. $\sqrt[4]{81x^{20}y^8}$ 8. $\sqrt[3]{128a^{13}b^6}$
- 9. Multiply and simplify $\sqrt[3]{7\pi^7} + \sqrt[3]{6\pi^8}$. Assume that all variables are positive. (ex. 3, p.381)

Divide and simplify. (ex. 4, p.382)

10.
$$\frac{\sqrt[3]{162}}{\sqrt[3]{2}}$$
 11. $\frac{\sqrt[3]{270x^{20}}}{\sqrt[3]{5x}}$ 12. $\frac{\sqrt{90x^{18}}}{\sqrt{2x}}$

Rationalize the denominator of the expression. Assume that all variables are positive. (*ex. 5, p.382*) (*ex. 6, p.388*)

13.
$$\frac{\sqrt{6x^8y^9}}{\sqrt{5x^2y^4}}$$
 14. $\frac{\sqrt{3} - \sqrt{6}}{\sqrt{3} + \sqrt{6}}$

15.
$$\frac{2+\sqrt[3]{3}}{\sqrt[3]{6}}$$
 16. $\frac{\sqrt{2x^{11}y^{12}}}{\sqrt{5x^3y^7}}$

17. A garden has width $\sqrt{13}$ and length $7\sqrt{13}$. What is the perimeter of the garden in simplest radical form? (*ex. 1, p.386*)

Simplify. (ex. 1, p.386, ex.1) 18. $-\sqrt{5} - 3\sqrt{36} + 6\sqrt{5}$

Simplify.
$$(ex. 1, p.391)$$

19. $13^{\frac{1}{2}} \cdot 13^{\frac{1}{2}}$
20. $10^{\frac{1}{3}} \cdot 100^{\frac{1}{3}}$
21. $8^{\frac{4}{3}}$
22. $27^{\frac{2}{3}}$

Multiply. (*ex.* 4, *p.*387)

- 23. $(7 \sqrt{2})(8 + \sqrt{2})$ 24. $(-5 \sqrt{3})^2$
- 25. Write the exponential expression $3x^{\overline{8}}$ in radical form. (ex. 2, p.392)
 - **Solve the equation.** (*ex. 1 & 2, p.397-398*)
- 26. $\sqrt{x+10} 7 = -5$ 27. $(x-7)^{\frac{2}{3}} = 4$ 28. $4(3-x)^{\frac{4}{3}} - 5 = 59$ 27. $\sqrt{x-3} - 10 = -6$
- 30. The area of a circular trampoline is 112.07 square feet. What is the radius of the trampoline? Round to the nearest hundredth. (*ex. 3, p.398*)

Solve. Check for extraneous solutions. (ex. 4, p.399)

- 31. $6x = \sqrt{24 + 12x}$ 32. $4x = \sqrt{18 + 12x}$
- 33. Let $f(x) = x^2 + 2x 1$ and g(x) = 2x 4. Find 2f(x) 3g(x). (ex. 1, p.404)
- 34. Let f(x) = 3x + 2 and g(x) = 7x + 6. Find $f \cdot g$. (ex. 2, p.405)
- 35. Let $f(x) = 3x^2 + 10x 8$ and g(x) = x + 4. Find $\frac{3f(x)}{g(x)}$. (ex. 2, p.405)
- 36. Let f(x) = -2x 7 and g(x) = -4x + 3. Find $(f \circ g)(-5)$. (ex. 3, p.405)
- 37. The velocity of sound in air is given by the equation $v = 15\sqrt{315 + t}$, where v is the velocity in meters per second and t is the temperature in degrees Celsius. Solve the equation for t. (*ex. 5, p.415*)
- 38. The formula for the surface area of a sphere is A = 4 πr², where A is surface area and r is the radius of the sphere. (ex. 5, p.415 & ex. 5, p.382)
 a. Use the formula to express r in terms of A.
 b. Rationalize the denominator.
- 39. What is the formula for the volume of a sphere?a. Use the formula to express *r* , the radius, in terms of *V*, volume..b. Rationalize the denominator

Chapter 7 Review Answer Section

1.
$$x^3 + 19x^2 - x + 9$$
 34. $21x^2 + 32x + 12$

 2. $5w^3 - w^2 - 4w$; cubic trinomial
 35. $9x - 6$

 3. $3 \pm 5i, -4$
 36. -53

 4. 4 complex roots; 0, 2 or 4 real roots
 37. $t = \frac{y^2}{225} - 315$

 6. $-\frac{5}{7}$
 38.

 7. $3|x^3|y^2$
 38.

 8. $4a^4b^{23}\sqrt{2a}$
 9. $x^3 \cdot \sqrt[3]{42}$

 9. $x^3 \cdot \sqrt[3]{42}$
 9. $\sqrt[4]{4\pi} = r$

 9. $x^3 \cdot \sqrt[3]{42}$
 9. $\sqrt[4]{4\pi} = r$

 10. $3^3\sqrt{3}$
 9.

 11. $3x^{63}\sqrt{2x}$
 39.

 12. $3x^6\sqrt{5x}$
 39.

 13. $\frac{\pi^3y^2\sqrt{30y}}{5}$
 39.

 14. $-3 + 2\sqrt{2}$
 9.

 15. $\frac{2^3\sqrt{36} + 3^3\sqrt{4}}{6}$
 9. $\sqrt[4]{\frac{\pi}{4\pi}} = r$

 16. $\frac{x^4y^2\sqrt{10y}}{5}$
 9. $\sqrt[5]{\frac{\sqrt{4\pi}}{4\pi}} = r$

 17. $16\sqrt{13}$ units
 18.

 18. $5\sqrt{5} - 18$
 9.

 19. 13
 10.

 21. 16
 2.

 2
 9

 23. $54 - \sqrt{2}$
 2.

 24. $28 + 10\sqrt{3}$
 5. $3^3\sqrt{x^3}$

 26. -6
 7. $15, -1$

 27. 32
 39.

33. $2x^2 - 2x + 10$