Chapter 6 Review

Review must be turned in to be eligible for retest. Show ALL work on separate sheet of paper!!

#1-2. Classify each polynomial by degree and number of terms. (p. 313 Ex. 1)

- 1. $-3x^5 2x^3$ 2. $7x^5 - 9x^4 - 6x^2 + 8$
- 3. Write $-4x^2(3x^2 + x^3)$ in standard form. Then classify it by degree and number of terms. (p. 313 Ex. 1)
- 4. Zach wrote the formula w(w-1)(4w+6) 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. (p. 313 Ex. 1)
- 5. The table shows the number of hybrid cottonwood trees planted in tree farms in Oregon since 1995. Find a cubic function to model the data and use it to estimate the number of cottonwoods planted in 2007. (p. 314 Ex. 3)

Years since 1995	1	3	5	7	9
Trees planted (in thousands)	1.3	18.3	70.5	177.1	357.3

#6 – 7. Factor. (Remember to first look for a GCF!) (p. 320 Ex. 2)

6. $5x^3 + 0x^2 - 45x$

7. $6x^3 + 42x^2 + 60x$

- 8. Write a polynomial function in standard form with zeros at 3, -5, and -2. (p. 322 Ex. 5)
- 9. Find the zeros of y = x(x + 4)(x 3). Then sketch the graph of the equation. (p. 321 Ex. 4)

#10 – 12. Divide using synthetic division or long division. (You need to know how to do both for the test!) Determine whether the binomial is a factor of the polynomial. (p. 327 Ex. 1&3, p. 328 Ex 3)

10.
$$(x^4 + 20x^3 + 74x^2 + 31x - 36) \div (x + 4)$$

11. $(x^3 + 3x^2 - 11x + 4) \div (x + 6)$

12.
$$-4x^3 - 2x^2 - x - 3$$
 by $x - 4$.

13. Use synthetic division to find P(3) for $P(x) = x^4 - 8x^3 - 9x^2 + 7x - 7$. (p. 329 Ex. 5)

#14 - 17. Solve by factoring. (p. 335 Ex. 4, p. 336 Ex. 6) 14. $x^3 + 8 = 0$ 15. $c^3 - 27 = 0$ 16. $x^4 - 45x^2 = -324$. 17. $x^4 - 25x^2 + 144 = 0$.

#18 – 19. Use the rational root theorem to list all possible rational roots of the polynomial equation. Do <u>NOT find any actual roots</u>. (p. 342 Ex. 1) 18. $x^3 + 7x^2 - 8x + 9 = 0$ 19. $2x^3 + 3x^2 - 4x - 10 = 0$

#20 – 21. Find the <u>rational</u> roots of the polynomial equation. (p. 342 Ex. 1) 20. $2x^3 + 3x^2 + x + 30 = 0$ 21. $x^4 + 8x^3 + 7x^2 - 40x - 60 = 0$

#22 – 23. Find ALL of the roots of the polynomial equation. (p. 342 Ex. 2) 22. $x^3 - 7x^2 + 20x - 24 = 0$ 23. $2x^3 + 9x^2 + 5x - 12 = 0$

#24 – 25. A polynomial equation has the following roots. Find two additional roots. (p. 343 Ex. 3&4) 24. $7 + \sqrt{1}, 7 - \sqrt{7}$ 25. $1 + \sqrt{2}, 5 - \sqrt{7}$

#26 – 27. For the equation, find the number of complex roots, the possible number of real roots, and the possible rational roots. (p. 348 Ex. 1)

26.
$$x^7 - 2x^6 + 3x^2 - 2x + 5 = 0$$

27. $2x^4 + 7x^2 - 5x + 12 = 0$