Alg 2 Sem 2 Final Review 2015 Chapter 6

1. Classify $-7x^5 - 6x^4 + 4x^3$ by degree and by number of terms.

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.

3. 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 2006.

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

4. Write $4x^3 + 8x^2 - 96x$ in factored form.

5. Miguel is designing shipping boxes that are rectangular prisms. One shape of box with height h in feet, has a volume defined by the function $V(h) = h(h - 10)(h - 8)$. Graph the function. What is the maximum volume for the domain $0 < h < 10$? Round to the nearest cubic foot.

6. Write a polynomial function in standard form with zeros at 5, –4, and 1.

7. Find the zeros of $f(x) = (x + 3)^2(x - 5)^6$ and state the multiplicity.

8. Divide $3x^3 - 3x^2 - 4x + 3$ by $x + 3$.

Solve the equation by graphing.

9. $-8x^3 - 13x^2 + 6x = 0$

10. **Factor the expression.** $x^3 + 216$

11. Solve. $x^4 - 20x^2 + 64$

12. Solve $27x^3 + 125 = 0$.

13. Ian designed a child's tent in the shape of a cube. The volume of the tent in cubic feet can be modeled by the equation $s^3 - 64 = 0$, where s is the side length. What is the side length of the tent?