Mth 096 – Beginning Algebra – **Practice Exam 6**

NOTE: This exam should not be taken as a complete list of possible problems. It is merely intended to be an example of the difficulty level of the regular exam. To best utilize it as a *practice* exam, try to complete the exam without notes or distractions. Try to emulate the classroom environment as much as possible.

Special Factoring Formulas:

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$
$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

1. Find the GCF for each list.

   a. $12y^4, 20y^3$

   b. $18x^2y, 9x^3y^3, 36x^3y^2$

In problems 2-13, factor each of the following as completely as possible.

2. $24a^3b - 36a^2c^2 + 48ab^3$

3. $x^2 - 8x - xy + 8y$

4. $10xy - 15y^2$

5. $y^2 + 49$

6. $a^2 - 36$

7. $3y^2 + 11y + 6$

8. $x^2 + 3xy - 10y^2$

9. $x^2 - 13x + 30$

10. $2t^2 + 20t + 50$

11. $25x^2 + 60xy + 36y^2$

12. $25a^2 - 9b^2$

13. $y^3 + 125$

In problems 14-16, solve each equation. Be sure to check your solutions.

14. $a^2 = 5a$

15. $x^2 - 3x - 10 = 0$

16. $y^2 + y = 12$

17. Find the *x*-intercepts of the graph of $y = x^2 + 4x - 5$.

18. If a ball is thrown up into the air with an initial velocity of 10 m/s from the roof of a 15-m tall building, its height above the ground after *t* seconds is $h(t) = -5t^2 + 10t + 15$ meters. When will the ball hit the ground? (Hint: Think about what $h(t)$ represents, and the connection to the phrase 'hit the ground'.)