Mth 096 – Beginning Algebra – **Practice Exam 5**

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.

Simplify each of the following as completely as possible. Your answers should not contain any negative exponents.

1. $y^4 y^3$

2. $\dfrac{a^4 b^3}{a^6 b^2}$

3. $\left(3x^3 y^4\right)^2$

4. $\left(\dfrac{1200x^{-5}y^{-7}z^{26}}{35x^{-2}yz^{15}}\right)^0$

5. $\dfrac{\left(-x^2\right)^4}{-\left(x^3\right)^{-2}}$

6. $\dfrac{-3^2+5^2}{-2^2}$

7. $\left(\dfrac{m^3}{m^5}\right)^{-2}$

8. Write each in scientific notation.

   a. 0.000 000 043

   b. 56,300,000

9. Write each in standard decimal notation.

   a. $1.54 \times 10^{5}$

   b. $2.34 \times 10^{-4}$

10. Perform each calculation and write your answer in standard decimal notation.

   a. $\left(3 \times 10^{5}\right)\left(6 \times 10^{-10}\right)$

   b. $\dfrac{9 \times 10^{-7}}{3 \times 10^{-4}}$

11. For each of the following, consider the polynomial $x^4 + 2x^3 - 5$.

   a. How many terms are there?

   b. What is the degree of each term?

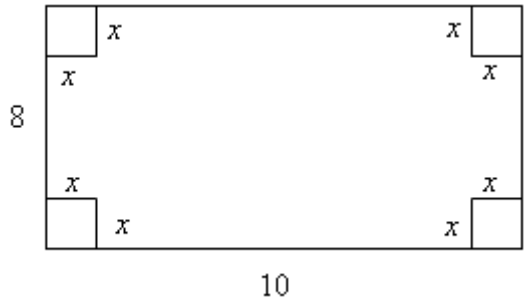
   c. What is the leading coefficient?

   d. What is the degree of the polynomial?

12. What is the degree of the polynomial $x^3y + 2xy^2 - 3x^2y^3$?

13. Simplify the following expression:
$$(5w^4 - w^3 - w) - (2w^3 - 3w^2 - 5w)$$

14. Suppose an $x$ by $x$ square is cut out of each corner of an 8 by 10 rectangle as shown below. Find an expression for the remaining area in terms of $x$.



Multiply and simplify each of the following. Leave your answers in standard form.

15. $(x+2)(x-3)$

16. $(y+5)(y-5)$

17. $(a+3)^2$

18. $(3y+4)(2y-5)$

19. $(x-5)(x^2+2x-1)$

Divide the polynomials.

20. $\dfrac{4x^3y + 2xy^2}{x^2y}$

21. $\dfrac{x^2 + 5x - 6}{x - 1}$

22. $\dfrac{x^3 + 4x - 5}{x + 2}$