Math 40 **Practice Exam #3** Name: _____
Fall 2015 Instructor: Amber Buntin

Instructions. (0 points) This Practice Exam and is NOT to be handed in. Attempt this exam multiple times until you feel prepared to take the Exam. Show as many steps as possible when simplifying and solving so that you get partial credit on the exam for work shown.

1. Given the following polynomial, $-4x^2y^5 + 6x^3y^3 - 9x^4 - 2 + xy^2$

a) How many terms are there?

b) Arrange polynomial in descending order with respect to x

c) List the coefficients as they appear in descending order.

2. Perform the following operations and simplify completely. Use POSITIVE exponents only.

a) $(-3x + 5x^2 + 4) + (-7 - 3x^2 + 4x)$

b) $(a^2 + 3ab - b^2) - (11ab + 4a^2 - 9b^2)$

c) $(3xy + 4x^2 - 9y^2) - (-7x^2 + y^2 + 2xy) + (4xy - 3x^2 - 14y^2)$

3. Identify the base and the exponent of the following expressions. Do NOT simplify.

a) x^{15}
Base: Exponent:

b) $(9y)^3$
Base: Exponent:

c) $-4z^2$
Base: Exponent:

4. Complete the following properties of exponents. Leave answers with positive exponents.

a) $x^m x^n$

b) $\dfrac{x^m}{x^n}$

c) $(x^m)^n$

d) $(xy)^n$

e) $\left(\dfrac{x}{y}\right)^n$

f) x^{-m}

5. Simplify the following expressions completely and leave all answers with POSITIVE exponents only.

a) $x^{5/12}x^{1/12}$

b) $(-2x^7y^3z)(15x^2yz)$

c) $\dfrac{4xy^7}{8x^5y^4}$

d) $\dfrac{2(2aa^2)^3}{2a^2a^3}$

e) $\left(\dfrac{26x^2y^2}{13y^{-4}}\right)^0$

f) $\dfrac{(x^{-2})^3(x^4)^2}{(x^{-3})^{-2}}$

g) $\left(\dfrac{15x^{-7}y^5}{18xy^{-3}}\right)^{-2}$

6. Expand each number from scientific notation to expanded form. Re-write final number nice and clean with ONLY one decimal point in final answer.

a) $-5.89x10^{7}$

b) $1.234x10^{-4}$

7. Write each number using scientific notation.

a) $2,380,000$

b) 0.000584

8. Multiply the following polynomials. Simplify completely and put answers in descending order.

a) $-2xy(3x^2y + 5xy^2 - 6)$

b) $(2x - 4)(5x + 3)$

c) $(3x + 2)(3x - 2)$

d) $(7x - 6)^2$

e) $(x + 5)(x^2 + 2x + 7)$

f) $(3a^2 - 9a + 4)(3a^2 - 9a + 2)$

9. Divide using LONG DIVISION!

a) $(7x^2 - 12x - 4) \div (x - 2)$

b) $\dfrac{6a^2 + 5a + 1}{2a + 3}$

10. Factor the polynomials completely. Show some steps and if you are guessing and checking, show check.

a) $20a^4b^3 - 18a^3b^4 + 22a^4b^4$

b) $2ax + 6x - 5a - 15$

c) $8x^3 - 12x^2 + 14x - 21$

d) $16x^3y - 24x^2y + 28xy - 42y$

11. Factor the polynomial completely. Show some steps and if you are guessing and checking, show check.

a) $7x + x^2 - 8$

b) $-28 + 2x^2 + 10x$

c) $-2x^3 - 26x^2 + 60x$

d) $x^2 + 9xy + 20y^2$

12. Factor the polynomial completely.

a) $2y^2 + 7y + 3$

b) $6 + 6x^2 - 13x$

c) $-10x + 8x^3 + 16x^2$

d) $3x^2y + 14xy^2 - 5y^3$

Exam 3 is not limited to these examples. All topics covered so far are fair game for the Exam including vocabulary terms. There will be problems very similar to the actual homework problems on the exam. You should study worksheets to practice repetition of problems especially the exponent worksheets.