Math 115 Test #3(Ch4, 5.1 – 5.4) Name_____

Show all work neatly and systematically for full credit. Total points: 105(3 points each)

Simplify the expression. Write the result without using negative exponents. (Assume all variables represent nonzero real numbers.)

1) $(3m^2n^{-3})^2(m^6n^7)$

Perform the indicated calculation. Express your answer using scientific notation.

2) $(5.6 \times 10^{-5})(5 \times 10^{-9})$

Evaluate the polynomial.

3) $x^2 + 3y^2 + 2xy$ for $x = 5$ and $y = -2$

Add or subtract.

4) $(5x^8 + 4x^7 - 5x^6 - 6) - (3x^8 - 6x^7 + 9x^6 - 2)$

Multiply.

5) $-3y(-9x^3y^6)(-2xy^5)$

Divide. Assume all variables are nonzero.

6) $\dfrac{14m^8n - 8m^7n^5 + 10m^6n^7}{2m^5n}$

7) **Multiply.**

$(6x - 5)^2$

Simplify. Do not use negative exponents in your answer.

8) $\dfrac{35x^{-6}yz^2}{5x^2y^4z}$

Multiply.

9) $4xy^5(-2xy^4 - 12y^3 + 1)$

Simplify.

10) $5 - 5^{-1} - 5^0$

Multiply.

11) $(3x + 6)(x + 1)$

12) $(x + 3)(x^2 - x + 7)$

13) $(x + 10y)(x - 4y)$

14) $(x^3y + 3)(x^3y - 3)$

Simplify the exponential expression. Write the result using only positive exponents.

15) $\frac{4^5x^{-3}y^4}{4^8x^{-6}y^8}$

Divide using long division.

16) $\frac{3x^2 + 17x - 36}{x + 8}$

17) Given a polynomial:
$4xy^2 - 7x^5y^6z + 4x^3y - 4$

List the terms:

List the coefficient for each term.

What is the degree of the polynomial?

Multiply.

18) $\left(12x + \frac{2}{5}\right)\left(12x - \frac{2}{5}\right)$

19) $(3x + 0.2)(3x - 0.2)$

Factor the polynomial completely. If the polynomial cannot be factored, say it is prime.

20) $x^4 - 625$

21) $20x^5 + 16x^3 - 4x$

22) $xy + 12x - 9y - 108$

23) $x^2 + 9x + 14$

24) $5x^2 + 11x - 12$

25) $4m - 10mn + 4n$

26) $x^2 - x - 63$

27) $10x^2 - 15x + 6x - 9$

28) $6x^4y^7z - 10x^3y^6$

Factor the polynomial completely. If the polynomial cannot be factored, say it is prime.

29) $63x^3 - 603x^2 + 324x$

30) $10x^2 + 23x + 12$

31) $81x^2 - 4$

32) $10(x + 8) - y(x + 8)$

33) $16x^2 + 24xy + 9y^2$

34) $4x^2y - 20xy - 56y$

Factor completely. If the polynomial is prime, state this.

35) $45x^3 - 30x^2 - 40x$