Alg/Geo 2 First Semester Midterm Exam Review

I can...

- ☐ Write polynomials in standard form
- ☐ Classify polynomials by the number of terms and the degree
- ☐ Find the degree for a monomial and polynomial
- ☐ Multiply a monomial by a polynomial
- ☐ Factor a polynomial by greatest common factor
- ☐ Multiply binomials by binomials
- ☐ Multiply binomials by trinomials
- ☐ Factor a trinomial without a leading coefficient
- ☐ Factor a trinomial with a leading coefficient
- ☐ Simplify Rational expressions
- ☐ Multiply & Divide rational expressions
- ☐ Use long division to simplify rational expressions
- ☐ Add & Subtract rational expressions

Write each polynomial in standard form. Then name each polynomial based on its degree and number of terms.

1. $2x^3 - x^2 + 4x$

2. $y^2 + 3y + 6 - 4y^2 - 6y$

3. $8 - 6w - 12w - 8w^2 - 7 - 3w^3$

4. $6x^5 + 3x^3 - 7x^5 - 4x^3$

Simplify. Write each answer in standard form.

5. $(x^2 - 3x + 5) + (x^2 + 2x - 3)$

6. $(2x^2 + 6x + 7) + (3x^2 + 3x - 5)$

7. $(3x^2 + 4x - 10) - (2x + 7 - 4x^2)$

8. $(8x - 4x^2 + x^3) - (8x^2 + 4x^3 - 7x)$

Simplify each product. Write in standard form.

9. $8x(3x + 4 - x^2)$

10. $-y(8y^2 + y)$

11. $7x(3 - x + 6x^3)$

12. $5y(y^5 + 8y^3)$

13. $6x(x^2 + 2x + 1)$

14. $(y + 4)(y + 3)$

15. $(a + 3)(a - 1)$

16. $(2y - 8)(y - 4)$

17. $(x + 1)^2$

18. $(x - 1)(x^2 + 6x + 4)$

19. $(2x^2 - 6x - 5)(3 - x)$

20. $(8x - 7)(3x + 2)$

Name_____   Period _____

Match each polynomial with its classification by degree name.

1. _____ $x^2 + 6x - 2$ A. Constant

2. _____ $x^3 + 5$ B. Linear

3. _____ $x^5 - 8$ C. Quadratic

4. _____ $x^4 + 2x^3 + 7$ D. Cubic

5. _____   50   E. Quartic

6. _____ $x + 91$ F. Quintic

Match each polynomial with its classification by its number of terms, answers may be used more than once.

7. _____ $-x^7 + 8x - 14$ A. Polynomial

8. _____ $100x^2 y$ B. Trinomial

9. _____ $2x^4 - 28x + 6$ C. Monomial

10. _____ $2x^4 + 7x^2$ D. Binomial

11. _____ $-46x + 54$

12. _____ $-2x^5 + 7x^3 - x^2 + 9x - 8$

For each problem below, factor by finding the GCF.

1) $2a^4 + 8a$	2) $5x^3 - 10$
3) $8ab^2 - 12a^2b^3$	4) $10c^3d^2 - 15cd^3$
5) $15f - 20g^2$	6) $3y^4 + 9y^2 - 15$
7) $10d^7 + 2d^5$	8) $7w^5 - 35w^2$
9) $2x + 2y$	10) $-32y^2 - 24y$
11) $6x^2yz + 2xy^2z - 4xyz$	12) $12a^4b^3c^2 - 4a^3bc^2 + 8a^2c - 16ab$

Algebra 1   Name_____

Worksheet: Factoring Trinomials (a=1)   Date_____

Write each trinomial in factored form (as the product of two binomials).

1) $p^2 + 14p + 48$

3) $p^2 + 14p + 40$

5) $p^2 - 8p + 7$

7) $b^2 - 8b + 15$

9) $k^2 - 4k - 60$

11) $p^2 - 2p - 15$

Factor each completely. (Remember to pull out the GCF first.)

13) $3r^2 + 21r + 30$

15) $2r^2 - 16r + 30$

17) $3b^2 - 3b - 36$

Factoring Trinomials (a > 1)

Name_____

Date_____ Period_____

Factor each completely.

1) $3p^2 - 2p - 5$

3) $3n^2 - 8n + 4$

5) $2v^2 + 11v + 5$

7) $7a^2 + 53a + 28$

RATIONAL EXPRESSIONS – EXERCISES

Reduce to lowest terms:

1. $\dfrac{x-2}{x^2-4}$

2. $\dfrac{5x+25}{x^2-25}$

3. $\dfrac{x^2-2x+1}{x-1}$

4. $\dfrac{x-3}{x^2-6x+9}$

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

6. $\dfrac{2x^2+5x-3}{x^2-9}$

Perform the indicated operations:

7. $\dfrac{x-3}{x^2-4}\cdot\dfrac{x+2}{x^2-6x+9}$

8. $\dfrac{x+y}{x-1}\cdot\dfrac{x^2-2x+1}{x^2-y^2}$

9. $\dfrac{3x^2-2x-8}{2x^2+3x-2}\div\dfrac{x^2-4}{3x+4}$

10. $\dfrac{x^2+7x+12}{x-5}\div\dfrac{x^2+9x+18}{x^2-7x+10}$

11. $\dfrac{x+3}{2x-1}+\dfrac{x-1}{2x-1}$

12. $\dfrac{b-2}{b^2+4b-5}+\dfrac{b-1}{b^2+4b-5}$

13. $\dfrac{r-3}{r^2+7r+10}-\dfrac{r-1}{r^2+7r+10}$

14. $\dfrac{2}{3v^4+18v^3}+\dfrac{v-3}{3v^4+18v^3}$

15. $\dfrac{n-3}{n+5}+\dfrac{5}{n+5}$

16. $\dfrac{2}{5b-2}-\dfrac{5b}{5b-2}$

17. $\dfrac{5x}{2x-2}-\dfrac{3x}{2x-2}$

Name _____

AG2 Midterm Review: Dividing Polynomials

1. $(2x^2 + 5x - 3) \div (x - 3)$	2. $\left(8x^4 + 16x^3 + 24x^2\right) \div 8x^2$
3. $(12x^3 + 2 + 11x + 20x^2) \div (2x + 1)$	4. $\left(v^8 + 12v^7 + 2v^6\right) \div 4v^3$
5. $\left(4n^3 - 13n - 6\right) \div \left(2n + 1\right)$	6. $\left(18b^3 + 3b^2 + 3b\right) \div 6b^3$
7. $(x^2 - 2x + 3) \div (x + 5)$	8. $\left(2n^3 + 8n^2 + 12n\right) \div 4n$