3.1/3.2 – Add, Subtract and Multiply Polynomials
Algebra 3

Name _____
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Add or subtract the following polynomials

1. $(6x + 7) + (3x + 8)$

2. $(5x - 3) - (3x + 9)$

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

4. $(x^2 - 4x + 5) + (-2x^2 + 7x - 10)$

5. $(2x^2 - 2x + 6) + (11x^3 - x^2 - 2 + 5x)$

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

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

8. $(12x^2 + x) - (6 - 9x^2 + x^7 - 8x)$

Multiply the following polynomials

9. $(2x + 3)(7x + 7)$

10. $(8x + 6)(x - 5)$

11. $(7x + 5)(4x + 6)$

12. $(4x + 8)(8x^2 - 3x - 4)$

13. $(x - 7)(5x^2 - 3x - 5)$

14. $(6x - 5)(7x^2 + x - 4)$

15. $(5x^2 + 3x - 8)(2x^2 - 6x - 3)$

16. $(x^2 - 4x + 6)^2$

Use the Binomial Theorem to expand the expressions

17. $(3x - 1)^3$

18. $(x - 4)^4$

19. $(a - 4b)^2$

20. $(x + 2y)^3$

21. $(2x - 1)^4$

22. $(y - x^2)^3$

3.4 Factoring All Ways
Algebra 3

Name _____
Date _____ Block _____

Factor the polynomials completely

1. $x^2 - 25$

2. $x^2 - 81$

3. $2x^3 - 32x$

4. $3x^2y - 12y$

5. $4x^2 - 25$

6. $9x^2 - 1$

7. $x^3 - 8$

8. $3x^3 - 81$

9. $343 - x^3$

10. $3x^4y + 24xy$

11. $6x^3 + 2x^2 - 3x - 1$

12. $3x^3 + 3x^2 + 4x + 4$

13. $6x^3 + 10x^2 - 9x - 15$

14. $12x^3 - 28x^2 - 3x - 7$

15. $4x^3 + 10x^2 - 6x - 15$

16. $6x^3 - x^2 + 24x - 4$

17. $2x^3 + x^2 - 8x - 4$

18. $8x^3 - 20x^2 - 18x + 45$

19. $x^4 - 3x^2 - 4$

20. $x^6 + 9x^3 + 8$

21. $x^4 - 8x^2 + 12$

22. $6x^4 - x^2 - 2$

23. $2x^6 - 13x^3 - 24$

24. $3x^6 - 7x^3 + 4$

25. $x^{10} - x^5 - 42$

26. $2x^8 - 7x^4 - 4$

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

28. $x^4 + 8x^3 + 24x^2 + 32x + 16$

29. $x^4 - 12x^3 + 54x^2 - 108x + 81$

30. $x^3 + 15x^2 + 75x + 125$