Algebra II Notes- Unit 2

Day 17: **Properties of Exponents**

5x^4

Where, 5 = coefficient or #, x = base, 4 = exponent & x^4 = power

Exponent Rules:
- NO negative exponents
- When multiplying… x #s & + exponents
- When dividing… / #s & - exponents
- Exponent to a high power… multiply
- If the base does not have an exponent, consider it a 1.

Complete: Algebra Book pg. 709 #1-16

Day 19: Operations on Polynomials

Operations on Polynomials- Standard Forms (orders the exponents from least to greatest)

Linear: Ax + By = C
Quadratic: ax^2 + bx + c
Cubic: ax^3 + bx^2 + cx + d
Quartic: ax^4 + bx^3 + cx^2 + dx + e
Quintic: ax^5 + bx^4 + cx^3 + dx^2 + ex + f

Simplify & write your answer in standard form.

1. (4x^3 – 3x^2 + 1) + (4x^2 – 3x – 5)

2. (5x^4 – 3x^3 + 2x – 1) + (x^4 + 3x^2 – 2x – 3)

3. (5x^3 + 3x^2 – 2x – 5) – (2x^3 – 5x^2 + x – 3)

4. $(x^5 + 3x^2 - 1) + 2x(3x^2 + 4x - 5)$

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

6. $(2x - y)(3x - 4y)$

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

8. $(4x - 5y)^2$

9. $(2x^2 - 3x + 4)(3x^2 - x - 1)$

10. $(3x^2 - 2x + 1)(4x^2 - 5x - 2)$

Day 20: Polynomial Division

Simplify using long division.

1. 836 / 24

2. (9x^3 – 18x^2 – x + 2) / (3x + 1)

3. (2x^3 + 9x^2 + 14x + 5) / (2x + 1)

4. (x^3 + 27) / (x + 3)

Day 21: Science Field Trip

Day 22: Synthetic Division: To synthetically divide the binomial must be in the form x +/- ___; QUIZ

Simplify using synthetic division.

1. (x^3 – 7x^2 – 7x + 20) / (x + 4)

2. (x^3 + 3x^2 – x – 3) / (x – 1)

3. (x^4 – 6x^2 – 27) / (x + 2)

4. (x^3 – 4x^2 – 6x – 4) / (x – 2)

Remainder Theorem:
Evaluate the function for the given value.

5. $f(x) = 3x^3 + 2x^2 - 5x + 1$ for $f(-3)$

6. $f(x) = 2x^3 - 4x^2 + 5x - 1$ for $f(-3)$

Day 23: Binomial Expansion

REVIEW: Solve using synthetic division.

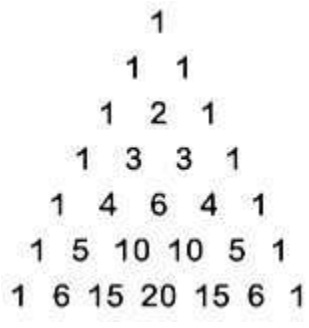
1. $(x^3 + 4x^2 - 8x - 6) / (x + 2)$

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

Binomial Expansion:

3. $(x + 2)^2$

Pascal's Triangle



4. $(x + 1)^7$

5. $(x + y)^3$

6. $(a - b)^6$

7. $(x - y)^3$

8. $(x - 2)^6$

9. $(x + 2y)^5$

Day 24: Greatest Common Factor & Factoring (by grouping)

Find the GCF & factor. JIST: _____

1. $4x^3 + 12x^2 - 8x$

2. $5v^5 + 10v^3$

3. $3t^2 - 18$

4. $4b^3 - 2b^2 - 6b$

Factor completely.

5. $4n^3 + 8n^2 - 5n - 10$

6. $5t^4 + 20t^3 + 6t + 24$

7. $2w^3 + w^2 - 14w - 7$

8. $12p^4 + 10p^3 - 36p^2 - 30p$

9. $45m^4 - 9m^3 + 30m^2 - 6m$

10. $48x^2 + 46x + 5$

11. $24q^2 + 25q - 25$

12. $4y^2 + 33y - 70$

Day 25: Factoring in the form ax^2+bx+c, Factoring (difference of squares & cubes), & Perfect Square Trinomials

***Always take out GCF 1st!**

Factor completely.

1. x^2 + 3x + 2

2. y^2 – 9y +14

3. x^2 – 2x – 15

4. b^2 – 16

5. x^2 – 4x + 4

6. 4x^2 – 121

7. 9k^2 – 25

8. x^2 + 6x + 9

9. 24y^2 – 6

10. 2w^2 – w – 3

11. 2t^2 + 3t – 2

12. 6x^2 + 10x + 4

Sum & Difference of Cubes: $a^3 + b^3 = (a + b)(a^2 – ab + b^2)$

$a^3 – b^3 = (a – b)(a^2 + ab + b^2)$

13. x^3 – 8

14. 8x^3 – 1

15. 81x^3 – 192

Day 28: **Factoring quartics.**

Review. Factor each expression.

1. $27x^3 - 1$

2. $2x^3 + 2$

Factor each expression.

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

4. $x^4 + 7x^2 + 6$

5. $x^4 - 3x^2 - 10$

6. $x^4 - x^2 - 12$

7. $x^4 + 11x^2 + 18$

8. $2x^4 - 5x^3 - 3x^2$

9. $x^4 + 8x^2 - 20$

Day 29: **Unit 2 Review; Problem Set DUE**

Day 30: **Mathematician Quiz**

Day 31: **Unit 2 TEST**