4.5 and 4.6 Multiplication of Polynomials

NOTE: $X^3 + X^3 = 1X^3 + 1X^3 = 2X^3$ **<u>BUT</u>** **$X^3X^3 = X^6$**

A. Monomial times Monomial: Multiply coefficients and add exponents of like bases.

1. $(6x^3)(-3x^4)$
2. $(-y^7)(-y^3)$
3. $(-\frac{3}{4}x^4)(\frac{2}{5}x)$
4. $(-2y)(-4y^2)(-5y^4)$

5. $(-6y^5)(4y)$
6. $(m^7)(-m^2)$
7. $(-3w^3)(-4w^5)$
8. $(-y)(3y)(2y^3)$

B. Monomial times Binomial : Distribute

9. $2x(4x - 5)$
10. $y^2(y^3 + 1)$
11. $(x^2 + 2x)(-3x^4)$

12. $8x(3x - 5)$
13. $(w^3 - 3)w^4$
14. $-6x^3(3x^2 - x - 2)$

C. Binomial times Binomial: Distribute, and then combine like terms if possible

15. $(x + 3)(x + 4)$
16. $(x - 4)(x - 5)$
17. $(x + 3)(x - 3)$

18. $(2y + 3)(y + 4)$
19. $(2x - y)(3x + 5y)$
20. $(m^2 - 3)(m^2 + 3)$

D. Binomial Squared: Write twice then multiply

21. $(x - 2)^2$

22. $(3m + 2)^2$

23. $(5x - 2)^2$

E. Binomial times Trinomial: Distribute, and then combine like terms if possible

24. $(a + 2)(a^2 - 2a + 3)$

25. $(x - 3)(x^2 - 4x - 1)$

26. $(2x + 1)(x^2 + 3x - 2)$

You Try:

1. $(-2mn^2)(4m^4n^6)$

2. $-3m^2(4m^3 - 6m^2 - 2)$

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

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

5. $(m - 3)(2m^2 - m + 4)$

6. $x^2 + 4x^3 - 7$

(a) Put in descending order:
(b) Binomial, trinomial, polynomial?
(c) Degree?
(d) Coefficients?