

Problem Set #1.5 - Adding, Subtracting, and Multiplying Polynomials

Name: _____ Class: _____

Find each sum or difference by combining the parts that are alike.

1. $(2p + 4) + 5(p - 1) - (p + 7)$

2. $7x^4 + 9x - 2(x^4 + 13)$

3. $(6 - t - t^4) + (9t + t^4)$

4. $(5 - t^2) + 6(t^2 - 8) - (t^2 + 12)$

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

6. $(12x + 1) + 2(x - 4) - (x - 15)$

7. $(13x^2 + 5x) - 2(x^2 + 1)$

8. $(9 - t - t^2) - \frac{3}{2}(8t + 2t^2)$

9. $(4m + 6) - 12(m - 3) + (m + 2)$

10. $(15x^4 + 10x) - 12(x^4 + 4x)$

11. Celina says that the expression $5abc - 2a^2 + 6abc$ is actually a binomial in disguise because it is equivalent to $11abc - 2a^2$. She also thinks the following expressions are binomials in disguise. Is she right? Justify your answer.

a. $5x^3 \cdot 2x^2 - 10x^4 + 3x^5 + 3x \cdot (-2)x^4$

b. $(t + 2)^2 - 4t$

c. $5(a - 1) - 10(a - 1) + 100(a - 1)$

d. $(2\pi r - \pi r^2)r - (2\pi r - \pi r^2) \cdot 2r$

Use the distributive property to write each of the following expressions.

12. $3a(4 + a)$

13. $\frac{1}{3}(12z + 18z^2)$

14. $(x - 4)(x + 5)$

15. $(2z - 1)(3z^2 + 1)$

16. $(10w - 1)(10w + 1)$

17. $(-5w - 3)w^2$

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

19. $(w + 1)(w^4 - w^3 + w^2 - w + 1)$

20. $(t - 1)(t + 1)(t^2 + 1)$

21. $(x + y)(y + z)(z + x)$

22. $\frac{x + y}{3}$

23. $(-2f^3 - 2f + 1)(f^2 - f + 2)$

Use the distributive property (and your wits!) to write each of the following expressions as a sum of monomials. If the resulting polynomial is one variable, write the polynomial in standard form.

24. $(a + b)^2$

25. $(a + 1)^2$

26. $(3 + b)^2$

27. $(x + y + z)^2$

28. $(4x^2 - 5x + 1)^2$

29. $(p - 1)^3$

The expression $10x^2 + 6x^3$ is the result of applying the distributive property to the expression $2x^2(5 + x)$. It is also the result of applying the distributive property to $2(5x^2 + 3x^3)$ or to $x(10x + 6x^2)$ for example. For the questions below, write down an expression such that if you applied the distributive property to your expression it will give the result presented. Give interesting answers!

30. $6a + 14a^2$

31. $42w^3 - 14w + 77w^5$

32. $z^2(a + b) + z^3(a + b)$

33. $\frac{3}{2}x^2 + \frac{1}{2}$

34. $(4x + 3)(x^2 + x^3) - (2x + 2)(x^2 + x^3)$

35. $(2z + 5)(z - 2) - (13z - 26)(z - 3)$

36. Sammy wrote a polynomial using only one variable, x , of degree 3. Myisha wrote a polynomial in the same variable of degree 5. What can you say about the degree of the product of Sammy and Myisha's polynomials?

Extension:

Find a polynomial that, when multiplied by $2x^2 + 3x + 1$ gives the answer $2x^3 + x^2 - 2x - 1$