

Operations of Polynomials Review

Name: _____

In Exercises 1–8, write the polynomial in standard form, and find its degree and leading coefficient.

1. $10x - 4$

2. $3x^2 + 8$

3. $5 - 3y^4$

4. $10 + 3x^2 - 15x^5 - 7x$

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

6. $16z^2 - 8z - 4z^3$

7. $35t - 16t^2$

8. $8z - 16z^2$

In Exercises 9–14, determine whether the polynomial is a monomial, binomial, or trinomial.

9. $12 - 5y^2$

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

11. $1.3x^2$

12. t^3

13. $2u^7 - 9u^3$

14. $2 + x^4 - 4z^2$

In Exercises 15–18, evaluate the polynomial for each specified value of the variable.

15. $x^3 - 12x$ when $x = -2$

16. $\frac{1}{4}x^4 - 2x^2$ when $x = 2$

17. $x^4 - 4x^3 + 16x - 16$ when $x = -1$

18. $3t^4 + 4t^3$ when $t = 1$

In Exercises 19–24, find the sum of the polynomials.

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

22. $(5x^2 - 3x + 4) + (-3x^2 - 4)$

20. $(3x^2 - 2x + 8) + (3x - 5)$

23. $(4x^3 - 2x^2 + 8x) + (4x^2 + x - 6)$

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

24. $(2b - 3) + (b^2 - 2b) + (7 - b^2)$

In Exercises 25–28, find the difference of the polynomials.

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

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

26. $(5y^4 - 2) - (3y^4 + 2)$

28. $(-2x^3 - 15x + 25) - (2x^3 - 12)$

In Exercises 29–36, find the product of the polynomials.

29. $(-2a^2)(-8a)$

33. $(5 - x)(3 + x)$

30. $2y(5 - y)$

34. $(y + 3)^2$

31. $4x^2(2x^2 - 3x + 5)$

35. $(3a^4 + 5)(2a^4 - 7)$

32. $(x + 7)(x - 4)$

36. $(2 - y)(4 - y)$

In Exercises 37-40, find the product of the polynomials.

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

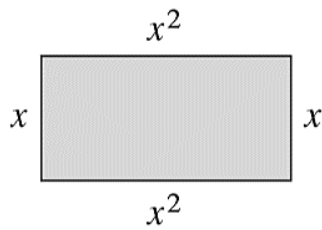
39. $(x^2 + 2x - 1)(2x^2 - 5x + 6)$

38. $(t + 3)(t^2 - 5t + 1)$

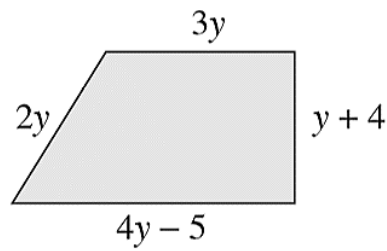
40. $(x^2 - 4x + 6)(2x^2 + 3x - 4)$

In Exercises 41-43, write an expression for the perimeter of the figure.

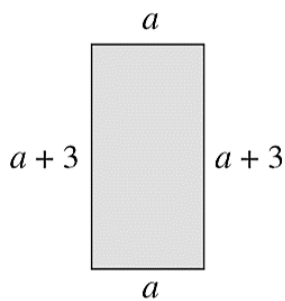
41.



42.

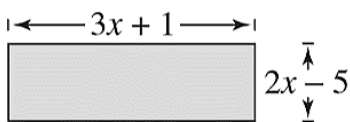


43.

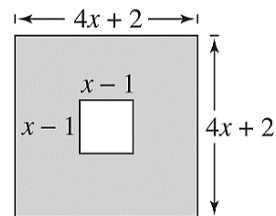


In Exercises 44-45, write an expression for the area of the figure.

44.



45.



Rational vs Irrational

In Exercises 1 – 9, is the number rational or irrational?

1. -15

2. $\sqrt{15}$

3. $\sqrt{16}$

4. 3.14

5. π

6. $\frac{7}{3}$

7. $2.\bar{3}$

8. 0

9. $2\sqrt{3}$

Simplifying Irrational Numbers

In Exercises 10-18, simplify the following irrational numbers.

10. $\sqrt{75}$

11. $\sqrt{200}$

12. $\sqrt{108}$

13. $\sqrt{12}$

14. $\sqrt{58}$

15. $\sqrt{18}$

16. $6\sqrt{18}$

17. $\sqrt{180}$

18. $\sqrt{288}$

Simplifying Radicals

In Exercises 19-27, simplify the radical.

$$19. \sqrt{24x^2}$$

$$20. \sqrt{100x^5}$$

$$21. 7\sqrt{175}$$

$$22. \sqrt{36x^9}$$

$$23. 3\sqrt{50x^6}$$

$$24. \sqrt{18x^2}$$

$$25. \sqrt{6x^8}$$

$$26. \sqrt{40x^7}$$

$$27. \sqrt{121x^2}$$

Operations of Radicals

In Exercises 28-43, perform the indicated operation.

$$28. -\sqrt{3} - 3\sqrt{3}$$

$$36. -3\sqrt{2} - 3\sqrt{2}$$

$$29. 3\sqrt{3} - \sqrt{3} - 2\sqrt{2}$$

$$37. 2\sqrt{5} - 2\sqrt{6} + 3\sqrt{5}$$

$$30. \sqrt{6} + \sqrt{24}$$

$$31. -2\sqrt{12} - \sqrt{12}$$

$$32. -\sqrt{6} + 2\sqrt{6} - \sqrt{18}$$

$$33. \sqrt{3} \cdot \sqrt{3}$$

$$34. -3\sqrt{15}(5 + \sqrt{3})$$

$$35. (4\sqrt{5} - 3)(\sqrt{5} - 2)$$

$$38. \sqrt{5} + \sqrt{5}$$

$$39. 3\sqrt{54} + 2\sqrt{24}$$

$$40. 3\sqrt{12} - 2\sqrt{12} - \sqrt{54}$$

$$41. \sqrt{5} \cdot \sqrt{5}$$

$$42. 3\sqrt{5}(\sqrt{5} + 3)$$

$$43. (3\sqrt{5} + \sqrt{3})(\sqrt{5} + \sqrt{3})$$