

5-2

Practice

Polynomials

Determine whether each expression is a polynomial. If it is a polynomial, state the degree of the polynomial.

1. $5x^3 + 2xy^4 + 6xy$

yes

2. $-\frac{4}{3}ac - a^5d^3$

yes 8

3. $\frac{12m^8n^9}{(m-n)^2}$

no

4. $25x^3z - x\sqrt{78}$

5

5. $6c^{-2} + c - 1$

no

6. $\frac{5}{r} + \frac{6}{s}$

no

Simplify.

7. $(3n^2 + 1) + (8n^2 - 8)$

$11n^2 - 7$

9. $(-6n - 13n^2) + (-3n + 9n^2)$

$-9n - 4n^2$

11. $(5m^2 - 2mp - 6p^2) - (-3m^2 + 5mp + p^2)$

$8m^2 - 7mp - 7p^2$

13. $(5t - 7) + (2t^2 + 3t + 12)$

$2t^2 + 8t + 5$

15. $-9(y^2 - 7w)$

$-9y^2 + 63w$

17. $-6a^2w(a^3w - aw^4)$

$-6a^5w^2 + 6a^3w^5$

19. $2x^2(x^2 + xy - 2y^2)$

$2x^4 + 2x^3y - 4x^2y^2$

21. $(v^2 - 6)(v^2 + 4)$

$v^4 - 2v^2 - 24$

23. $(y - 8)^2$

$y^2 - 16y + 64$

25. $(5x + 4w)(5x - 4w)$

$25x^2 - 16w^2$

27. $(w + 2s)(w^2 - 2ws + 4s^2)$

$w^3 + 8s^3$

29. **BANKING** Terry invests \$1500 in two mutual funds. The first year, one fund grows 3.8% and the other grows 6%. Write a polynomial to represent the amount Terry's \$1500 grows to in that year if x represents the amount he invested in the fund with the lesser growth rate.

$-0.022x + 1590$

30. **GEOMETRY** The area of the base of a rectangular box measures $2x^2 + 4x - 3$ square units. The height of the box measures x units. Find a polynomial expression for the volume of the box.

$2x^3 + 4x^2 - 3x$ units³

8. $(6w - 11w^2) - (4 + 7w^2)$

$-18w^2 + 6w - 4$

10. $(8x^2 - 3x) - (4x^2 + 5x - 3)$

$4x^2 - 8x + 3$

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

$-x^2 + 3xy + 4y^2$

14. $(u - 4) - (6 + 3u^2 - 4u)$

$-3u^2 + 5u - 10$

16. $-9r^4y^2(-3ry^7 + 2r^3y^4 - 8r^{10})$

$27r^5y^9 - 18r^7y^6 + 72r^{14}y^2$

18. $5a^2w^3(a^2w^6 - 3a^4w^2 + 9aw^6)$

$5a^4w^9 - 15a^6w^5 + 45a^3w^9$

20. $-\frac{3}{5}ab^3d^2(-5ab^2d^5 - 5ab)$

$3a^2b^5d^7 + 3a^2b^4d^2$

22. $(7a + 9y)(2a - y)$

$14a^2 + 11ay - 9y^2$

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

$x^4 + 10x^2y + 25y^2$

26. $(2n^4 - 3)(2n^4 + 3)$

$4n^8 - 9$

28. $(x + y)(x^2 - 3xy + 2y^2)$

$x^3 - 2x^2y - xy^2 + 2y^3$