

Introduction to Polynomials (ALG.POL.02)

Classify each polynomial based on its degree and number of terms. Then write the polynomial in standard form.

- $p^3 - 3p^7 + 6p^5$ **septic trinomial** $-3p^7 + 6p^5 + p^3$
- $5k^{10} - 8k^6$ **decic binomial** $5k^{10} - 8k^6$
- $\frac{3}{8}d^6$ **sextic monomial** $\frac{3}{8}d^6$
- $7 - j$ **linear binomial** $-j + 7$
- $-11 + x^3 + 9x - 4x^2$ **cubic polynomial with four terms** $x^3 - 4x^2 + 9x - 11$
- $6x^9 - 8x^{15}$ **15th degree binomial** $-8x^{15} + 6x^9$
- $3m - 8 + 5m^2$ **quadratic trinomial** $5m^2 + 3m - 8$
- $4c - 2c^3 + 5 + 7c^5 - 8c^2$ **quintic polynomial with five terms** $7c^5 - 2c^3 - 8c^2 + 4c + 5$
- $5x^3 - 2x + 2x^8 - 7x^4$ **octic polynomial with four terms** $2x^8 - 7x^4 + 5x^3 - 2x$
- $13x^9$ **nonic monomial** $13x^9$

Write a polynomial in standard form for each classification. *Answers will vary.*

- cubic trinomial $6x^3 + 5x - 2$
- sextic monomial $-13m^6$
- octic polynomial with four terms $9n^8 - 3n^4 + 7n - 3$
- septic trinomial $-4a^7 - 3a^5 + 3a$
- linear binomial $9z - 5$
- quartic binomial $5c^4 + 6c$
- nonic polynomial with five terms $11u^9 - 10u^7 + 9u^5 - 8u^3 + 7u$
- 14th degree monomial $\frac{5}{8}k^{14}$
- constant monomial -4
- quintic polynomial with six terms $x^5 + 3x^4 + 9x^3 - 27x^2 - 81x - 243$

Use the given polynomial to answer each part.

21. $5x^3 - 11x^2 + x - 4$

- a. What is the leading coefficient? **5**
- b. What is the linear term? **x**
- c. What is the constant? **-4**
- d. What is the coefficient of the quadratic term? **-11**

22. $-12x^6 + 7x^4 - 5x^2 + 13$

- a. What is the leading coefficient? **-12**
- b. What is the quartic term? **$7x^4$**
- c. What is the coefficient of the quadratic term? **-5**
- d. What is the degree of the polynomial? **6**

23. $8x^9 + 14x^7 - 15x^5 - 3x$

- a. What is the degree of the polynomial? **9**
- b. What is the leading coefficient? **8**
- c. How many terms are in the polynomial? **4**
- d. What is the octic term? **$0x^8$**

24. $-14x^{12} + 120$

- a. What is the degree of the polynomial? **12**
- b. How many terms are in the polynomial? **2**
- c. What is the classification of the polynomial? **12th degree binomial**
- d. What is the leading coefficient? **-14**