

Unit 1 Algebra Basics Review

With each polynomial name the type, the degree, how many terms, all coefficients, and all constants.

1) $-3x^2 + 5$

Number of terms:

Coefficients:

Constants:

Classify by terms:

Classify by degree:

2) $x^4 + 6x^3 - 3x + 15$

Number of terms:

Coefficients:

Constants:

Classify by terms:

Classify by degree:

3) $x^6 - 5x^3 + 1$

Number of terms:

Coefficients:

Constants:

Classify by terms:

Classify by degree:

4) $7x^3$

Number of terms:

Coefficients:

Constants:

Classify by terms:

Classify by degree:

5) Explain what it means for terms to be "like terms".

Simplify each expression.

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

7) $(-7x^3 - 4x^2) + (x^3 + 6x^2 + 3x^4)$

8) $(4x^2 + 4x^4) + (5x^2 + 4x - 5x^4)$

9) $(8n^4 - n^3) - (-3n^3 - n^4 + 8)$

Find each product.

10) $(7n + 2)^2$

11) $(6x + 6)^2$

12) $(n + 1)^2$

13) $(x + 5)(6x + 5)$

14) $(4x + 2)(6x + 8)$

15) $(6n + 4)(3n + 2)$

16) $(2r - 1)(6r^2 + 6r + 3)$

17) $(8x + 1)(6x^2 + 3x + 7)$

18) $(2a - 1)(7a^2 + 2a + 3)$

Evaluate each function.

19) $f(x) = x - 2$

a. $f(-5)$

b. $f(2x)$

c. $f(4x) + 3$

20) $g(x) = 3x^2 + 1$

a. $g(-3)$

b. $g(-2x)$

c. $g(2x) + 7$

21) $h(x) = -5x - 2$

a. $h(8)$

b. $h(5x)$

c. $h(-4x) - 9$

22) $k(x) = 3x + 4$

a. $k(0)$

b. $k(-9x)$

c. $k(-2x) - 12$

Evaluate each of the following functions:

23) $f(x) = x - 2$

$g(x) = 3x^2 + 1$

$h(x) = -5x - 2$

$k(x) = 3x + 4$

24) $(f + g)(x)$

These are the functions you need to use for the next questions. You do not need to do anything for this problem.

25) $(k - f)(x)$

26) $(g - h)(x)$

27) $(f \cdot k)(x)$

28) $(h \cdot f)(x)$

29) $(g \cdot k)(x)$

Write each expression in exponential form.

30) $\sqrt[3]{10n^2}$

31) $\sqrt{(7p)^3}$

32) $\sqrt[3]{x}$

33) $\sqrt[3]{4x^5}$

Write each expression in radical form.

34) $x^{\frac{8}{5}}$

35) $(10x)^{\frac{1}{4}}$

36) $7a^{\frac{5}{3}}$

37) $6x^{\frac{5}{2}}$

Simplify. Your answer should contain only positive exponents.

$$38) (2n)^{-4} \cdot 2n^{-4}$$

$$39) (2a)^{-4} \cdot a^3$$

$$40) \frac{2x^3 \cdot 2x^{-1}}{4x^{-1}}$$

$$41) \frac{3m^{-3} \cdot 2m^2}{m^{-1}}$$

$$42) \frac{n^4}{(2n^4)^{-4}}$$

$$43) \frac{2m^4}{(m^4)^3}$$

$$44) x^{-2} \cdot 2x^{-\frac{4}{3}} \cdot 3x^3$$

$$45) 4p^{-\frac{3}{2}} \cdot 2p^{\frac{1}{2}}$$

$$46) \left(r^{-\frac{2}{3}}\right)^{-\frac{7}{4}}$$

$$47) \left(n^{-\frac{7}{4}}\right)^{-1}$$

$$48) \frac{2a^{\frac{2}{3}}}{3a^2}$$

$$49) \frac{4x^{\frac{3}{2}}}{2x^{-\frac{1}{4}}}$$

$$50) \left(x^{\frac{1}{3}}\right)^{\frac{3}{2}} \cdot \left(x^{\frac{3}{2}}\right)^2$$

$$51) x^{\frac{3}{2}} \cdot (x^0)^{-\frac{3}{4}}$$

$$52) \frac{2p}{2p^{\frac{1}{2}} \cdot 4p^{-1}}$$

$$53) \frac{4p}{2p^{\frac{1}{3}} \cdot 3p^{-1}}$$

$$54) \frac{a^{\frac{5}{3}}}{\left(a^{\frac{5}{4}}\right)^2}$$

$$55) \frac{n^{\frac{5}{4}}}{\left(n^{-\frac{2}{3}}\right)^{-\frac{7}{4}}}$$