Algebra 1 B What You Need to Know (Chapter 7 Test)

A1.7.1.1 / A1.7.1.2 Be able to evaluate expressions containing exponents of zero, integer exponents and negative exponents

Simplify.

-9^{-2} 6^{-2} -5^{-2} 3^{-3}

$3k^{-4}$ $5k^{-3}$ p^7q^{-1} $\dfrac{7}{r^{-7}}$

Simplify.

$\left(\dfrac{5}{6}\right)^{-2}$ $\left(\dfrac{3}{4}\right)^{-2}$ $\dfrac{x^4}{y^{-6}}$ $\dfrac{a^{-3}}{b^{-2}}$

Simplify.

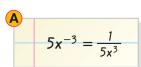3^0 8^0 $\left(\dfrac{2}{5}\right)^0$

Simplify.

$4m^0$ $2x^0y^{-4}$ $8f^{-4}\,g^0$

A1.7.3.1 Be able to identify if an exponential expression is completely simplified

/// ERROR ANALYSIS /// Look at the two equations below. Which is incorrect? Explain the error.

A
$5x^{-3} = \dfrac{1}{5x^3}$

B
$5x^{-3} = \dfrac{5}{x^3}$

True or False. You may leave a zero or negative exponent in a simplified expression.

A1.7.3.2, A1.7.3.3, and A1.7.3.4 Be able to use the multiplication properties of exponents to completely simplify expressions

Simplify.

$5^3 \cdot 5^3$ $\qquad$ $3^5 \cdot 3^{-3}$ $\qquad$ $p^4 \cdot p^5$ $\qquad$ $n^6 \cdot n^2$

$k^5 \cdot k^{-2} \cdot k^{-3}$ $\qquad$ $x^2 \cdot x^{-3} \cdot x^4$ $\qquad$ $a^5 \cdot a^0 \cdot a^{-5}$ $\qquad$ $a^3 \cdot a^{-6} \cdot a^{-2}$

$x^2 \cdot y^{-3} \cdot x^{-2} \cdot y^{-3}$ $\qquad$ $x^7 \cdot x^{-6} \cdot y^{-3}$

Simplify.

$\left(x^2\right)^5$ $\qquad$ $\left(y^4\right)^8$ $\qquad$ $\left(p^3\right)^3$

$\left(3x^4\right)^3$ $\qquad$ $\left(2x^5\right)^3$ $\qquad$ $\left(-4d^7\right)^2$

A1.7.3.5 Be able to simplify complex exponential expressions using multiple properties

Simplify.

$\left(a^{-3}\right)^4 \cdot \left(a^7\right)^2$ $\qquad$ $\left(cd^6\right)^3 \cdot \left(c^5d^2\right)^2$ $\qquad$ $xy \cdot \left(x^2\right)^3 \cdot \left(y^3\right)^4$

A1.7.4.1, A1.7.4.2, and A1.7.4.3 Be able to use the division properties of exponents to completely simplify expressions

Simplify.

$\dfrac{6^9}{6^7}$ $\qquad\qquad$ $\dfrac{12a^5}{3a^2}$ $\qquad\qquad$ $\dfrac{x^4 y^8}{x^6 y^6}$ $\qquad\qquad$ $\dfrac{5m^2 n^4}{m^2 n}$

$\left(\dfrac{3}{5}\right)^3$ $\qquad\qquad$ $\left(\dfrac{a^3 b^2}{ab^3}\right)^6$ $\qquad\qquad$ $\left(\dfrac{4p^3}{2pq^4}\right)^2$ $\qquad\qquad$ $\left(\dfrac{12a^3 b^2}{3ab^3}\right)^6$

$\left(\dfrac{x^2}{y^5}\right)^{-5}$ $\qquad\qquad$ $\left(\dfrac{1}{4}\right)^{-2}\left(\dfrac{6x}{7}\right)^{-2}$ $\qquad\qquad$ $\left(\dfrac{8w^7}{16}\right)^{-1}$ $\qquad\qquad$ $\left(\dfrac{x^3 y^4}{xy^5}\right)^{-3}$

A1.7.5.1, A1.7.5.2 Be able to find the degree of a monomial and a polynomial

Find the degree of each monomial.

10^6 $\qquad\qquad$ $-7xy^2$ $\qquad\qquad$ $0.4n^8$ $\qquad\qquad$ 2

Find the degree of each polynomial.

$x^2 - 2x + 1$ $\qquad\qquad$ $0.75a^2 b - 2a^3 b^5$ $\qquad\qquad$ $15y - 84y^3 + 100 - 3y^2$

$r^3 + r^2 - 5$ $\qquad\qquad$ $a^3 + a^2 - 2a$ $\qquad\qquad$ $3k^4 + k^3 - 2k^2 + k$

A1.7.5.3 Be able to write a polynomial in standard form, and identify the leading coefficient

Write each polynomial in standard form and give the leading coefficient.

$4r^2 + 2r^6 - 3r$ $\qquad$ $y^2 + 7 - 8y^3 + 2y$ $\qquad$ $-12t^3 - 4t + t^4$

$n + 3 + 3n^2$ $\qquad$ $2 + 3x^3$ $\qquad$ $-3a^2 + 16 + a^7 + a$

A1.7.5.4 Be able to classify a polynomial by its degree and number of terms

Classify each polynomial according to its degree and number of terms.

$2x^3 + 5x - 4$ $\qquad$ $5b^2$ $\qquad$ $6p^2 + 3p - p^4 + 2p^3$

$x^2 + 12 - x$ $\qquad$ $-2x^3 - 5 + x - 2x^7$ $\qquad$ $5 - 6b^2 + b - 4b^4$

A1.7.6.1, A1.7.6.2, A1.7.6.3 Be able to add and subtract polynomials

Add or subtract.

$\left(10m^3 + 4m^2\right) + \left(7m^2 + 3m\right)$ $\qquad$ $\left(3t^2 - 2t\right) + \left(9t^2 + 4t - 6\right)$

$\left(7n^2 - 3n\right) - \left(5n^2 + 5n\right)$ $\qquad$ $\left(b^2 - 10\right) - \left(-5b^3 + 4b\right)$

A1.7.7.1, A1.7.7.2 , A1.7.7.3, A1.7.7.4, and A1.7.7.5 Be able to multiply 2 monomials, multiply 2 binomials, multiply a monomial and a polynomial, and multiply 2 polynomials.

Multiply.

$2h^3 \cdot 5h^5$ $\qquad$ $(s^8 t^4)(-6st^3)$ $\qquad$ $2ab(5a^3 + 3a^2 b)$

$(3k + 5)^2$ $\qquad$ $(2x^3 + 3y)(4x^2 + y)$ $\qquad$ $(p^2 + 3p)(9p^2 - 6p - 5)$

A1.7.8.1, A1.7.8.2, and A1.7.8.3 Be able to find the products of two binomials using the special products of perfect square trinomials and be able to find the products of two binomials using the special products of the difference of two squares

Multiply.

$(d + 9)^2$ $\qquad$ $(3 + 2t)^2$ $\qquad$ $(2x + 5y)^2$ $\qquad$ $(m - 4)^2$

$(a - b)^2$ $\qquad$ $(3w - 1)^2$ $\qquad$ $(c + 2)(c - 2)$ $\qquad$ $(5r + 6)(5r - 6)$