

SHARP

Worksheet 8: Algebraic Expressions Term 1

Grade 9 Mathematics

1. Given the following expression: $3x^5 - 4x^4 + 8x^2 + 10x - 11$
 - a) What is the degree of this expression?
 - b) What is the coefficient of x^4 ?
 - c) Are there any like terms in the expression?
 - d) How many terms are in the expression?
 - e) What is the value of the constant?
 - f) If $x = -3$, what is the value of the expression?

2. Expand and simplify the following expressions
 - a) $-3(x^2 - 4x + 5) - 4x(x + 7)$
 - b) $(3x + 2)(3x - 2) + (3x - 2)^2$
 - c) $\frac{21x^3 + 35x^2 - 7x}{7x}$
 - d) $4y(9x + 8y) - 5x(6x - 9y)$
 - e) $12x(3x)^2 - 7x(x^2 + 12x - 9)$
 - f) $(7x + 10)(3x - 11) - 4x(3x + 5)$
 - g) $(12y - 4)^2 - \frac{24y^3 + 30y^2 - 48y}{6y}$
 - h) $(-2xy)^3 - 7xy(x^2y^2 - 8xy + 12)$
 - i) $\sqrt{144x^4 + 256x^4} - (9x)^2$
 - j) $8a(a^2 - 5a + 7) - (10a + 3)^2$
 - k) $6x^2y^3(7x + 8xy - 9y^2) - 4xy(5x^2y^3 - 2)$
 - l) $\frac{125m^3 - 15m^2}{5m} - 3m(7m + 9)$
 - m) $\sqrt[3]{(8x^3)^2} - \sqrt{(4x^2)^2}$
 - n) $(11x - 5)(9x + 8) - 4x(8x + 7)$
 - o) $6(12x^3 - 5x^2 + 7x) - 7x(8x^2 - 9x + 11)$
 - p) $\frac{108x^2y^3 - 84xy^2 + 24x^2y}{12xy} - \frac{50xy^2 + 45x^2y}{5xy}$
 - q) $\sqrt[3]{(8x^3)^2} - 37x^6$
 - r) $(9x - 12)^2 + 7x(4x - 7)$
 - s) $\frac{5x(6x^2y - 12xy^2)}{3xy}$
 - t) $\sqrt{(9x)^2 + (12x)^2}$



3. If $a = 4, b = -3, c = 12$ and $d = -2$, find the values of the following expressions.

a) $a^2 - b^2 + c^2 - d^2$

b) $2ab + cd$

c) $\frac{48}{c} - 3(ab)^2 - d^3$

d) $\frac{c^2}{ab} - \frac{a^2}{d^2}$

e) $\sqrt[3]{\frac{abc}{d}} + ad$

f) $ac - 4bd$

g) $6a - 5b + 11c - 18d$

h) $\frac{a^2d}{c} - \frac{a^2b}{c}$

i) $(a - b)(a + b)$

j) $a(b + c + d)$

