

FUNDAMENTAL OPERATIONS

EXERCISES IN ELEMENTARY ALGEBRA

Exercise 1. Numerical Substitution

Example 1: When $a = 1$, $b = 2$, $c = 5$, $d = 6$ and $m = 0$, give the value of $\frac{b^2c + a^2b^2}{2bc - 4ab}$.

First substitute the values, then do the computations.

$$\frac{(2)^2(5) + (1)^2(2)^2}{2(2)(5) - 4(1)(2)} = \frac{20 + 4}{20 - 8} = \frac{24}{12} = 2$$

When $a = 1$, $b = 2$, $c = 5$, $d = 6$ and $m = 0$, give the value of each of the following.

- $ad^2 + 5bc$
- $a^2bc^2 - 3ad + a^4$
- $mabc + 3a^2b^2c^2$
- $b^2cd - abc^2$
- $a^4b^3c + bcd$
- $ma^3 + 4cd - ad$
- $\frac{ab^2}{2} + 5c$
- $\frac{md}{3} + \frac{4cd}{b}$
- $\frac{ac}{d} + a$

Exercise 2. Addition

Example 1: Find the sum: $3xy + x^2 - 2y^2$, $2x^2 - 5y^2 - 2xy$ and $y^2 - x^2$.

Arrange your work so that similar terms are in the same column.

$$\begin{array}{r} x^2 + 3xy - 2y^2 \\ 2x^2 - 2xy - 5y^2 \\ -x^2 \quad + y^2 \\ \hline 2x^2 + xy - 6y^2 \end{array}$$

Find the sum.

- $7 + 6.1x - 3y$, $2 - 3.2x - 6.5y$ and $-3 - 1.8x$
- $ax - by - cm$, $14by - 17ax$, $13ax - 3by$ and $-17cm + 6ax$
- $13ax^2 - 9a^2x + 2ax$, $4a^2x - 3ax^2 - 7ax$ and $-3ax^2$
- $5x^3 + x^2y - 3xy^2$, $2xy^2 + 3y^3 - 4x^2y$ and $2y^3 - xy^2 - 2x^3$
- $-2x^2 + 3x^3 - 7x + 4$, $-x^3 + 4 - 7x^2 - 4x$ and $5x^2 - 3x - 4$