

UNIT 25 *Solving Equations*

Introduction to SIM

Learning objectives

This unit extends students' algebraic skills by solving more complicated equations. After completing this unit of STUDENT INSTRUCTIONAL MATERIAL (SIM) you should

- be able to manipulate algebraic fractions
- be able to solve quadratic equations that are derived from algebraic equations with fractions
- understand how to solve simultaneous equations where one is linear and one is quadratic.

Key points and principles

- Algebraic fractions are dealt with in a similar way to fractions.
- In solving simultaneous equations when one is linear and one is quadratic, substitute the linear equation with the quadratic, simplify the equation and then solve.

Facts to remember

- $\frac{1}{x+a} + \frac{1}{x-a} = \frac{2x}{x^2 - a^2}$

- When solving equations of the form

$$\frac{x+a}{x+b} + \frac{x+c}{x+d} = e$$

you multiply both sides by $(x+b)(x+d)$

- The solution of simultaneous equations, one linear and one quadratic, can have 0, 1 or 2 solutions: in this unit you will meet only simultaneous equations with 2 solutions.

Glossary of terms

Algebraic fractions

These are of the form

$$\frac{ax+b}{cx+d}$$

when a , b , c , and d are constants.

For example, $\frac{x+3}{3x-1}$, $\frac{2y+4}{3-2y}$, $\frac{3}{x+2}$