Algebra and Number

General Outcome: **Develop algebraic reasoning and number sense.**

Specific Outcomes

It is expected that students will:

11P.A.1. Demonstrate an understanding of the absolute value of real numbers.
[ME, R, V]

11P.A.2. Solve problems that involve operations on radicals and radical expressions with numerical and variable radicands.
[CN, ME, PS, R, T]

11P.A.3. Solve problems that involve radical equations (limited to square roots).
[C, CN, PS, R, T]

11P.A.4. Determine equivalent forms of rational expressions (limited to numerators and denominators that are monomials, binomials or trinomials).
[C, ME, R]

11P.A.5. Perform operations on rational expressions (limited to numerators and denominators that are monomials, binomials or trinomials).
[C, CN, ME, R]

11P.A.6. Solve problems that involve rational equations (limited to numerators and denominators that are monomials, binomials or trinomials).
[C, CN, PS, R]

Trigonometry

General Outcome: **Develop trigonometric reasoning.**

Specific Outcomes

It is expected that students will:

11P.T.1. Demonstrate an understanding of angles in standard position [0° to 360°].
[C, R, V]

11P.T.2. Solve problems, using the three primary trigonometric ratios (sine, cosine and tangent) for angles from 0° to 360° in standard position.
[C, ME, PS, R, T, V]

11P.T.3. Solve problems, using the cosine law and sine law, including the ambiguous case.
[C, CN, PS, R, T]

Relations and Functions

General Outcome: **Develop algebraic and graphical reasoning through the study of relations.**

Specific Outcomes

It is expected that students will:

11P.R.1. Factor polynomial expressions of the form:
- $ax^2+bx+c,\ a\neq 0$
- $a^2x^2-b^2y^2,\ a\neq 0,\ b\neq 0$
- $a\left(f\left(x\right)\right)^2+b\left(f\left(x\right)\right)+c,\ a\neq 0$
- $a^2\left(f\left(x\right)\right)^2-b^2\left(g\left(y\right)\right)^2,\ a\neq 0,\ b\neq 0$

where a, b and c are rational numbers.
[ME, R]

11P.R.2. Graph and analyze absolute value functions (limited to linear and quadratic functions) to solve problems.
[C, PS, R, T, V]

11P.R.3. Analyze quadratic functions of the form $y=a\left(x-p\right)^2+q$ and determine the:
- vertex
- domain and range
- direction of opening
- axis of symmetry
- x- and y-intercepts.

[C, CN, R, T, V]

11P.R.4. Analyze quadratic functions of the form $y=ax^2+bx+c$ to identify characteristics of the corresponding graph, including:
- vertex
- domain and range
- direction of opening
- axis of symmetry
- x- and y-intercepts

[C, CN, PS, R, T, V]

11P.R.5. Solve problems that involve quadratic equations.
[C, CN, PS, R, T, V]

11P.R.6. Solve, algebraically and graphically, problems that involve systems of linear-quadratic and quadratic-quadratic equations in two variables.
[C, CN, PS, R, T, V]

11P.R.7. Solve problems that involve linear and quadratic inequalities in two variables.
[C, PS, T, V]

11P.R.8. Solve problems that involve quadratic inequalities in one variable.
[CN, PS, V]

11P.R.9. Analyze arithmetic sequences and series to solve problems.
[C, CN, PS, R, T]

11P.R.10. Analyze geometric sequences and series to solve problems.
[C, CN, PS, R, T]

11P.R.11. Graph and analyze reciprocal functions (limited to the reciprocal of linear and quadratic functions).
[CN, R, T, V]

Processes:
C – Communication
CN – Connections
ME – Mental Mathematics and Estimation
PS – Problem Solving
R – Reasoning
T – Technology
V – Visualization