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Pre-Calculus 20 Outcomes

Pre-Calculus (P)

P20.1 Demonstrate understanding of the absolute value of real numbers and equations and functions involving the absolute value of linear and quadratic functions. [C, PS, R, T, V]

P20.2 Expand and demonstrate understanding of radicals with numerical and variable radicands including:

- computations
- solving equations (limited to square roots and one or two radicals).

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

P20.3 Expand and demonstrate understanding of rational expressions and equations (up to and including degree 2 numerators and denominators) including:

- equivalent forms of expressions
- operations on expressions
- solving equations that can be simplified to linear or quadratic equations.

[C, CN, ME, R]

P20.4 Expand and demonstrate understanding of the primary trigonometric ratios including the use of reference angles ($0^\circ \leq \theta \leq 360^\circ$) and the determination of exact values for trigonometric ratios. [C, ME, PS, R, T, V]

P20.5 Demonstrate understanding of the cosine law and sine law, including the ambiguous case. [C, CN, PS, R, T]

P20.6 Expand and demonstrate understanding of factoring polynomial expressions including those of the form:

- $a^2x^2 - b^2y^2$, $a \neq 0$, $b \neq 0$
- $a(f(x))^2 - b(f(x)) + c$, $a \neq 0$
- $a^2(f(x))^2 - b^2(g(y))^2$, $a \neq 0$, $b \neq 0$

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

P20.7 Demonstrate understanding of quadratic functions of the form $y=ax^2+bx+c$ and of their graphs, including:

- vertex
- domain and range
- direction of opening
- axis of symmetry
- x- and y-intercepts.

[CN, PS, R, T, V]

P20.8 Demonstrate understanding of quadratic equations including the solution of:

- single variable equations
- systems of linear-quadratic and quadratic-quadratic equations in two variables.

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

P20.9 Expand and demonstrate understanding of inequalities including:

- one-variable quadratic inequalities
- two-variable linear and quadratic inequalities.

[C, CN, PS, T, V]

P20.10 Demonstrate understanding of arithmetic and geometric (finite and infinite) sequences and series. [CN, PS, R, T]

P20.11 Demonstrate understanding of reciprocal functions of:

- linear functions
- quadratic functions.

[CN, R, T, V]

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