**KFUPM**

# Fundamental Concepts of Algebra

- The Real Numbers and Their Properties: classifying numbers; number line; inequalities; absolute value; distance.

- Integer Exponents and Scientific Notation: rules of exponents; simplifying; scientific notation.

- Polynomials: adding/subtracting; multiplying; special products.

- Factoring: greatest common factor; trinomials of form $x^2+bx+c$; perfect-square trinomials; difference of squares; sum & difference of cubes; factoring by grouping.

- Rational Expressions: simplification; multiplication/division; addition/subtraction; complex fractions.

- Rational Exponents and Radicals: square roots; simplifying radicals; other roots; rational exponents; conjugates.

- Linear Equations in One Variable: definitions; equivalent equations; solving; literal equations; applications

- Quadratic Equations: factoring method; square-root method; completing the square; quadratic formula; applications.

- Complex Numbers

- General Equations: rational equations; radical equations; equations with rational exponents; quadratic-in-form.

- Inequalities: linear and non-linear inequalities; compound inequalities

- Equations and Inequalities Involving Absolute Value: absolute-value equations; absolute-value inequalities; distance models.

- Ordered pairs; distance formula; midpoint formula; circles

- Lines: slope; equation of a line (point-slope; slope-intercept)

- Functions: function notation; domain & range; increasing/decreasing; even/odd functions; linear, quadratic, rational, square-root, cube-root, piecewise, basic functions; applications.