

## Chapter 1 Equations and Inequalities

### Section 1.1

**Equation in two variables** – A form of expressing a relationship between two quantities

**Solution of equation in two variables** – An ordered pair  $(a, b)$  is a solution of an equation in  $x$  and  $y$  if the equation is true when  $a$  is substituted for  $x$  and  $b$  is substituted for  $y$

**Graph of an equation** – The set of all points that are solutions of the equation

**Intercepts** – The points at which the graph intersects the  $x$ - or  $y$ -axis

**Symmetry** – If a graph is folded along a dividing line and the portion of the graph on one side of the dividing line coincides with the portion of the graph on the other side of the dividing line, then the graph is said to have symmetry

**Circle** – The set of points that are equidistant from a fixed point,  $(h, k)$ , called the center

### Section 1.2

**Equation in one variable** – A statement, involving one variable (usually  $x$ ), that two algebraic expressions are equal

**Solution of equation in one variable** – A value of the variable for which the equation is true

**Identity equation** – An equation that is true for every real numbers in the domain of the variable

**Conditional equation** – An equation that is true for some (or none) of the real numbers in the domain of the variable

**Linear equation in one variable** – An equation in  $x$  that can be written in the standard form  $ax + b = 0$  where  $a$  and  $b$  are real numbers with  $a \neq 0$

**Equivalent equations** – Two equations that have the same solution(s)

**Extraneous solution** – A solution that does not satisfy the original equation

### Section 1.4

**Quadratic equation** – An equation in  $x$  that can be written in the general form  $ax^2 + bx + c = 0$  where  $a$ ,  $b$ , and  $c$  are real numbers with  $a \neq 0$ .

**Quadratic formula** – The formula,  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ , for finding solutions to a quadratic equation in the general form  $ax^2 + bx + c = 0$

**Discriminant** – The quantity under the radical sign,  $b^2 - 4ac$ , in the Quadratic Formula

### Section 1.5

**Complex number**- If  $a$  and  $b$  are real numbers, the number  $a + bi$ , where the number  $a$  is called the real part and the number  $bi$  is called the imaginary part, is a complex number written in standard form

**Imaginary number** – If  $b \neq 0$ , the number  $a + bi$  is called an imaginary number

**Complex conjugates** - A pair of complex numbers of the form  $a + bi$  and  $a - bi$

### Section 1.6

**Polynomial equation** – An equation that can be written in the form

$$a_n x^n + a_{n-1} x^{n-1} + \dots + a_2 x^2 + a_1 x + a_0 = 0$$

### Section 1.7

**Solution of an inequality** – A value of the variable for which the inequality true

**Linear inequality in one variable** – An inequality in one variable (usually  $x$ ) that can be written in the form  $ax + b < 0$  or  $ax + b > 0$ , where  $a$  and  $b$  are real numbers with  $a \neq 0$ .

**Double inequality** – An inequality that represents two inequalities

### Section 1.8

**Critical numbers** – The  $x$ -values that make the polynomial in a polynomial inequality equal to zero