1.3 Basic Identities

Real numbers: a, b, c

34. Additive Identity
$a + 0 = a$

35. Additive Inverse
$a + (-a) = 0$

36. Commutative of Addition
$a + b = b + a$

37. Associative of Addition
$(a + b) + c = a + (b + c)$

38. Definition of Subtraction
$a - b = a + (-b)$

39. Multiplicative Identity
$a \cdot 1 = a$

40. Multiplicative Inverse
$a \cdot \frac{1}{a} = 1, \; a \neq 0$

41. Multiplication Times 0
$a \cdot 0 = 0$

42. Commutative of Multiplication
$a \cdot b = b \cdot a$

43. Associative of Multiplication

$$(a \cdot b) \cdot c = a \cdot (b \cdot c)$$

44. Distributive Law

$$a(b + c) = ab + ac$$

45. Definition of Division

$$\frac{a}{b} = a \cdot \frac{1}{b}$$