Section 2.1 Algebra
(reference 2.1)

LAWS

commutative: $a+b = b+a$
$ab = ba$

associative: $a+(b+c) = (a+b)+c$

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

IDENTITIES

exponents: $a^x a^y = a^{x+y}$
$(ab)^x = a^x b^x$
$(a^x)y = a^{xy}$
$a^{mn} = (a^m)^n$

if $a^0 = 1 \qquad a \neq 0$

$$a^{-x} = \frac{1}{a^x} = \left(\frac{1}{a}\right)^x$$

$$\frac{a^x}{a^y} = a^{x-y}$$

$$\sqrt[x]{ab} = \left[\sqrt[x]{a}\right]\left[\sqrt[x]{b}\right]$$

$$a^{x/y} = \sqrt[y]{a^x} = \left(\sqrt[y]{a}\right)^x$$

$$a^{1/y} = \sqrt[y]{a}$$

$$a^{x/y} = \sqrt[y]{a^x} = \left(\sqrt[y]{a}\right)^x$$

$$\sqrt[x]{a}\,\sqrt[y]{a} = a^{(1/x)+(1/y)} = \sqrt[xy]{a^{x+y}}$$

$$\sqrt{a} + \sqrt{b} = \sqrt{a+b+2\sqrt{ab}}$$