$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\frac{a}{c} + \frac{b}{d} = \frac{ad+bc}{cd}$$

$$\frac{a}{c} \cdot \frac{b}{d} = \frac{a}{c} \cdot \frac{d}{d} = \frac{ad}{cd}$$

$$\frac{a}{c} \cdot \frac{b}{d} = \frac{a}{c} \cdot \frac{d}{d} \Rightarrow ad = bc$$

$$\frac{a}{c} \cdot \frac{b}{d} = \frac{ad}{cd} \Leftrightarrow ad = bc$$

$$a^{0} = 1$$

$$a^{m} \cdot a^{n} = a^{m+n}$$

$$\left(a^{m}\right)^{n} = a^{mn}$$

$$\frac{a^{m}}{a^{n}} = a^{m-n}$$

$$a^{-n} = \frac{1}{a^{n}}$$

$$(ab)^{m} = a^{m}b^{m}$$

$$\left(\frac{a}{b}\right)^{m} = \frac{a^{m}}{b^{m}}$$

$$\sqrt{xy} = \sqrt{x}\sqrt{y}$$

$$\sqrt{\frac{x}{y}} = \frac{\sqrt{x}}{\sqrt{y}}$$

$$\sqrt{x} = x^{n}$$

$$\sqrt{x^{m}} = x^{n}$$

$$(a-b)(a+b) = a^{2} - b^{2}$$

$$(a-b)^{2} = a^{2} - 2ab + b^{2} = (a-b)^{2}$$

$$(a-b)^{2} = a^{2} - 2ab + b^{2}$$

$$(a+b)^{2} = a^{2} + 2ab + b^{2}$$

$$(a-b)^{3} = a^{3} - 3a^{2}b + 3ab^{2} - b^{3}$$

$$(a+b)^{3} = a^{3} + 3a^{2}b + 3ab^{2} + b^{3}$$

$$a^{2} - 2ab + b^{2} = (a-b)^{2}$$

$$a^{2} + 2ab + b^{2} = (a+b)^{2}$$

$$a^{2} - b^{2} = (a-b)(a+b)$$

$$a^{3} - b^{3} = (a-b)(a^{2} + ab + b^{2})$$

$$a^{3} + b^{3} = (a+b)(a^{2} - ab + b^{2})$$

$$x^{2} + (a+b)x + ab = (x+a)(x+b)$$

$$ax^2 + bx + c = 0$$
 $\Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$