

$$(a+b+c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$$

$$1. (a+b)^2 = a^2 + 2ab + b^2$$

$$2. (a+b)^2 = (a-b)^2 + 4ab$$

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

$$4. (a-b)^2 = (a+b)^2 - 4ab$$

$$5. a^2 + b^2 = (a+b)^2 - 2ab$$

$$6. a^2 + b^2 = (a-b)^2 + 2ab$$

$$7. a^2 - b^2 = (a+b)(a-b)$$

$$8. 2(a^2 + b^2) = (a+b)^2 + (a-b)^2$$

$$9. 4ab = (a+b)^2 - (a-b)^2$$

$$10. ab = \left\{ \frac{(a+b)}{2} \right\}^2 - \left\{ \frac{(a-b)}{2} \right\}^2$$

$$11. (a+b+c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$$

$$12. (a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$13. (a+b)^3 = a^3 + b^3 + 3ab(a+b)$$

$$14. (a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

$$15. a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

$$16. a^3 + b^3 = (a+b)^3 - 3ab(a+b)$$

$$17. a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

$$18. a^3 - b^3 = (a-b)^3 + 3ab(a-b)$$

$$\sin 0^\circ = 0$$

$$\sin 30^\circ = 1/2$$

$$\sin 45^\circ = 1/\sqrt{2}$$

$$\sin 60^\circ = \sqrt{3}/2$$

$$\sin 90^\circ = 1$$

$\cos$ is opposite of $\sin$

$$\tan 0^\circ = 0$$

$$\tan 30^\circ = 1/\sqrt{3}$$

$$\tan 45^\circ = 1$$

$$\tan 60^\circ = \sqrt{3}$$

$$\tan 90^\circ = \infty$$

$\cot$ is opposite of $\tan$

$$\sec 0^\circ = 1$$

$$\sec 30^\circ = 2/\sqrt{3}$$

$$\sec 45^\circ = \sqrt{2}$$

$$\sec 60^\circ = 2$$

$$\sec 90^\circ = \infty$$

$\csc$ is opposite of $\sec$

$$2\sin a \cos b = \sin(a+b) + \sin(a-b)$$

$$2\cos a \sin b = \sin(a+b) - \sin(a-b)$$

$$2\cos a \cos b = \cos(a+b) + \cos(a-b)$$

$$2\sin a \sin b = \cos(a-b) - \cos(a+b)$$

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