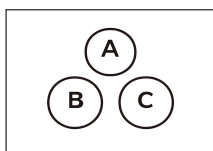


34 Formulas and Identities

Half Angle Formulas

F



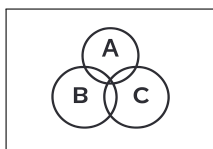
$$\theta = 45^\circ$$

$$\tan^2(45^\circ) = (1 - \cos(90^\circ))/(1 + \cos(90^\circ))$$

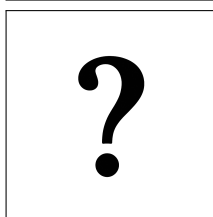
$$\tan^2(45^\circ) = (1 - 0)/(1 + 0)$$

$$\tan^2(45^\circ) = 1/1$$

$$\tan^2(45^\circ) = 1$$



$$\tan^2(\theta) = (1 - \cos(2\theta))/(1 + \cos(2\theta))$$



$$\theta = 75^\circ$$

$$\tan^2(\theta) = ?$$

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$$\theta = 75^\circ$$

$$\tan^2(\theta) = (1 - \cos(2\theta)) / (1 + \cos(2\theta))$$

$$\tan^2(75^\circ) = (1 - \cos(150^\circ)) / (1 + \cos(150^\circ))$$

$$\tan^2(75^\circ) = (1 - (-\sqrt{3}/2)) / (1 + (-\sqrt{3}/2))$$

$$\tan^2(75^\circ) = (1 + \sqrt{3}/2) / (1 - \sqrt{3}/2)$$

$$\tan^2(75^\circ) = 2 + \sqrt{3}/2 - \sqrt{3}$$

$$\tan^2(75^\circ) = (2 + \sqrt{3})^2 / (4 - 3)$$

$$\tan^2(75^\circ) = (2 + \sqrt{3})^2$$

$$\tan^2(75^\circ) = 4 + 4\sqrt{3} + 3$$

$$\tan^2(75^\circ) = 7 + 4\sqrt{3}$$