

$$\cos 2A = \cos^2 A - \sin^2 A$$

$$\sin 2A = 2 \sin A \cos A$$

$$\cos 2A = 1 - 2 \sin^2 A$$

$$\cos 2A = 2 \cos^2 A - 1$$

$$\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

Verify the Double Angle Identities: (These all follow easily from the sum and difference identities.)

Verify:

$$\cos 2A = \cos^2 A - \sin^2 A$$

Verify:

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Verify:

$$\cos 2A = 2 \cos^2 A - 1$$

Verify:

$$\sin 2A = 2 \sin A \cos A$$

Example: Use identities to find values of the sine and cosine functions for each angle measure.

a) Find $\cos 2\theta =$ _____ and $\sin 2\theta =$ _____, given that $\cos \theta = -\frac{12}{13}$ and $\sin \theta > 0$.

b) Find $\cos \theta =$ _____ and $\sin \theta =$ _____, given that $\cos 2\theta = -\frac{28}{53}$ and $90^\circ < \theta < 180^\circ$