

Double angles (C)

It follows directly from the addition formulae that

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

and

$$\sin(2A) = 2\sin(A)\cos(A).$$

Exercises:

1. Derive these two identities.
2. Use the circle identity to show that

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

and

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

3. Derive identities for $\cos(3A)$ and $\sin(3A)$.