Double Angle Formulae

1. $\sin(2A) = 2\sin(A)\cos(A)$
   $= \frac{2\tan(A)}{1+\tan^2(A)}$
2. $\cos(2A) = \cos^2(A) - \sin^2(A)$
   $= 2\cos^2(A) - 1$
   $= 1 - 2\sin^2(A)$
3. $\tan(2A) = \frac{2\tan(A)}{1-\tan^2(A)}$
4. $\cot(2A) = \frac{\cot^2(A)-1}{2\cot(A)}$

Half Angle Formulae

5. $\sin(A) = 2\sin\left(\frac{A}{2}\right) * \cos\left(\frac{A}{2}\right)$
   $= \frac{2\tan(\frac{A}{2})}{1+\tan^2\left(\frac{A}{2}\right)}$
6. $\cos(A) = \cos^2\left(\frac{A}{2}\right) - \sin^2\left(\frac{A}{2}\right)$
   $= 1 - 2\sin^2(\frac{A}{2})$
   $= 2\cos^2\left(\frac{A}{2}\right) - 1$
   $= \frac{1-\tan^2(\frac{A}{2})}{1+\tan^2(\frac{A}{2})}$
7. $\tan(A) = \frac{2\tan\left(\frac{A}{2}\right)}{1-\tan^2\left(\frac{A}{2}\right)}$
8. $\sin\left(\frac{A}{2}\right) = \sqrt{\frac{1-\cos(A)}{2}}$
9. $\cos\left(\frac{A}{2}\right) = \sqrt{\frac{1+\cos(A)}{2}}$

10. $\tan\left(\frac{A}{2}\right) = \sqrt{\frac{1-\cos(A)}{1+\cos(A)}}$

Triple Angle Formula

11. $\sin(3A) = 3\sin(A) - 4\sin^3(A)$
12. $\cos(3A) = 4\cos^3(A) - 3\cos(A)$
13. $\tan(3A) = \frac{3\tan(A) - \tan^3(A)}{1 - 3\tan^2(A)}$