# 7C Double Angles Formulae

$Sin2A \equiv 2SinACosA$

Key points:

If you see sin and cos multiplied together and both have the same angle -> this can be reduced using sin double angle formulae to a single trig function

Examples:

a) sinxcosx =

b) 6cosxsinx =

c) 5sin3xcos3x =

$$Cos2A \equiv Cos^2 A \ - Sin^2 A$$

Key points:

If you see $Sin^2 A$ or $Cos^2 A$ this can be reduced using the cos double angle formulae to a single trig function

Examples:

a) $Sin^2 x$ =

b) $4Cos^2 x$ =

c) $3Sin^2 4x$ =

$$Tan\ 2A \equiv \frac{2TanA}{1-Tan^2A}$$

1. Use the double angle formulae to write the following expression as a single trigonometric ratio:

   a) $Cos^2 50 - Sin^2 50$

   b) $\frac{2tan\frac{\pi}{6}}{1-tan^2\frac{\pi}{6}}$

   c) $\frac{4sin70}{sec70}$

2. Given that $x = 3sin\theta$ and $y = 3 - 4cos2\theta$, eliminate $\theta$ and express $y$ in terms of $x$.

3. Given that:

$$cosx = \frac{3}{4}, \quad 180^\circ < x < 360^\circ$$

Find the exact value of:

a) $sin2x$

b) $tan2x$