# Higher Homework 3 – Trigonometry

**1. (a)** Express $\cos x - \sqrt{3}\sin x$ in terms of $k\sin(x - \alpha)°$ $0 \le \alpha \le 360°$, $k > 0$ **4**

   **(b) (i)** Hence state the maximum and minimum values of
   $y = \cos x - \sqrt{3}\sin x$

   **(ii)** Determine the values of $x$ in the interval $0 \le \alpha \le 360°$,
   at which these maximum and minimum values occur **3**

**2.** A and B are acute angles such that $\tan A = \frac{3}{4}$ and $\tan B = \frac{5}{12}$
find the **exact** value of:

   **(a)** cos 2A **2**
   **(b)** sin 2A **1**
   **(c)** sin3A **3**

**3.** Find algebraically the **exact** value of $\sin\vartheta + \sin(\vartheta + 120)° + \cos(\vartheta + 50)°$ **3**