

- 9 (a) Express $3 \cos 3x + 7 \sin 3x$ in the form $R \cos(3x - \alpha)$, where $R > 0$ and $0 < \alpha < \frac{1}{2}\pi$. [3]
- (b) Give full details of a sequence of three transformations needed to transform the curve $y = \cos x$ to the curve $y = 3 \cos 3x + 7 \sin 3x$. [4]
- (c) Determine the **greatest** value of $3 \cos 3x + 7 \sin 3x$ as x varies and give the smallest positive value of x for which it occurs. [2]
- (d) Determine the **least** value of $3 \cos 3x + 7 \sin 3x$ as x varies and give the smallest positive value of x for which it occurs. [2]