**7** $\cos(A + B) = \cos A \cos B - \sin A \sin B$

(a) Express $\cos(2x + 45°)$ in the form $M\cos 2x + N\sin 2x$, where $M$ and $N$ are constants, giving the exact value of $M$ and the exact value of $N$.

**(2)**

(b) Solve, for $0° \leqslant x \leqslant 180°$, the equation $\cos 2x - \sin 2x = 1$

**(5)**

The maximum value of $\cos 2x - \sin 2x$ is $k$.

(c) Find the exact value of $k$.

**(2)**

(d) Find the smallest positive value of $x$ for which a maximum occurs.

**(3)**

**Question 7 continued**

**Question 7 continued**

**Question 7 continued**

**(Total for Question 7 is 12 marks)**