Question 2 (6 marks)
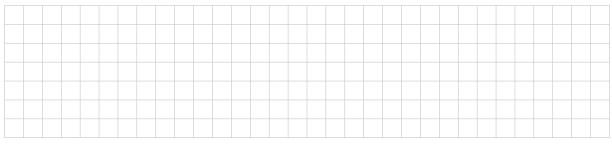
(a) (i) Express $1 + i$ in exact polar form.

(1 mark)

(ii) Express $\sqrt{3} - i$ in exact polar form.

(1 mark)
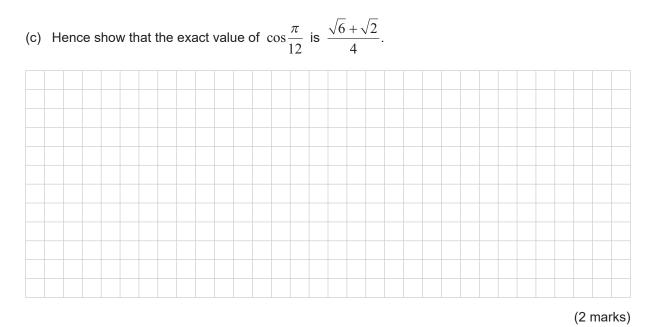
(b) Use your answers to part (a) to show that $(1+i)(\sqrt{3}-i) = 2\sqrt{2}\operatorname{cis}\dfrac{\pi}{12}$.

(2 marks)

(c) Hence show that the exact value of $\cos\dfrac{\pi}{12}$ is $\dfrac{\sqrt{6}+\sqrt{2}}{4}$.

(2 marks)