6   The function f, where $f(x) = a \sin x + b$, is defined for the domain $0 \leqslant x \leqslant 2\pi$. Given that $f\left(\frac{1}{2}\pi\right) = 2$ and that $f\left(\frac{3}{2}\pi\right) = -8$,

   (i) find the values of a and b, [3]

   (ii) find the values of x for which $f(x) = 0$, giving your answers in radians correct to 2 decimal places, [2]

   (iii) sketch the graph of $y = f(x)$. [2]