9 **(a)** **(i)** Write $6xy+3y+4x+2$ in the form $(ax+b)(cy+d)$, where a, b, c and d are positive integers. [1]

(ii) Hence solve the equation $6\sin\theta\cos\theta+3\cos\theta+4\sin\theta+2=0$ for $0° < \theta < 360°$. [4]

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(b) Solve the equation $\frac{1}{2}\sec\left(2\phi+\frac{\pi}{4}\right)=\frac{1}{\sqrt{3}}$ for $-\pi<\phi<\pi$, where ϕ is in radians. Give your answers in terms of π. [5]