**6** **(a)** Given that $\cot^2\theta = \frac{1}{y+2}$ and $\sec\theta = x-4$, find $y$ in terms of $x$. [2]

**(b)** Solve the equation $\sqrt{3}\,\text{cosec}\left(2\phi + \frac{3\pi}{4}\right) = 2$, for $-\pi < \phi < \pi$, giving your answers in terms of $\pi$. [5]

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