8 DO NOT USE A CALCULATOR IN THIS QUESTION.

(a) Find the exact coordinates of the points of intersection of the curve $y = x^2 + 2\sqrt{5}x - 20$ and the line $y = 3\sqrt{5}x + 10$. [4]

(b) It is given that $\tan\theta = \dfrac{\sqrt{3}-1}{2+\sqrt{3}}$, for $0 < \theta < \dfrac{\pi}{2}$. Find $\text{cosec}^2\theta$ in the form $a + b\sqrt{3}$, where a and b are constants. [5]