3 Given that $y = \tan\frac{x}{2}$, find the exact value of $\frac{\mathrm{d}y}{\mathrm{d}x}$ when $x = \frac{\pi}{3}$. [4]

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4 A team of 8 people is to be formed from 6 teachers, 5 doctors and 4 police officers.

(a) Find the number of teams that can be formed. [1]

(b) Find the number of teams that can be formed without any teachers. [1]

(c) Find the number of teams that can be formed with the same number of doctors as teachers. [4]

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