4 Solve the following equations, giving your answers to 3 significant figures.

(a) $2^{3x+1} = 5^{x-2}$ [3]

(b) $e^{2y+1} = 1 + \frac{6}{e^{2y+1}}$ [4]

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5 You are given that $y = \frac{1}{\cos 2x}$.

(a) Show that $\frac{\mathrm{d}y}{\mathrm{d}x} = \frac{k \sin 2x}{\cos^2 2x}$ where k is a constant to be found. [2]

(b) Find the values of x such that $\frac{\mathrm{d}y}{\mathrm{d}x} = \frac{5}{\sin 2x}$ for $0 < x < \frac{\pi}{2}$. [4]