9 When e^{2y} is plotted against x^2, a straight line graph passing through the points (4, 7.96) and (2, 3.76) is obtained.

(a) Find y in terms of x. [5]

(b) Find y when $x = 1$. [2]

(c) Using your equation from **part (a)**, find the positive values of x for which the straight line exists. [3]

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10 A curve with equation $y = \mathrm{f}(x)$ is such that $\frac{\mathrm{d}^2y}{\mathrm{d}x^2} = \left(2x+3\right)^{-\frac{1}{2}} + 5$ for $x > 0$. The curve has gradient 10 at the point $\left(3, \frac{19}{2}\right)$.

(a) Show that, when $x = 11$, $\frac{\mathrm{d}y}{\mathrm{d}x} = 52$. [5]

(b) Find $\mathrm{f}(x)$. [4]