4 A point P is moving along the curve with equation $y = ax^{\frac{5}{2}} - 12x$ in such a way that the x-coordinate of P is increasing at a constant rate of 5 units per second.

(a) Find the rate at which the y-coordinate of P is changing when $x = 9$. Give your answer in terms of the constant a. [3]

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(b) Given that the curve has a minimum point when $x = \frac{1}{4}$, find the value of a. [2]

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