3. **In this question you must show all stages of your working.**
Solutions relying entirely on calculator technology are not acceptable.

A particle P is moving along a straight line.
At time t seconds ($t \geqslant 0$), P is a distance x metres from a fixed point O on the line and is moving away from O with speed $\frac{8x}{3 + x^2}\,\text{m s}^{-1}$

(a) Find the magnitude of the acceleration of P when $x = 3$

(5)

Given that $x = 1$ when $t = 2$

(b) find the exact value of t when $x = 3$

(5)

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Question 3 continued

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Question 3 continued

(Total for Question 3 is 10 marks)

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