10. **In this question you must show all stages of your working.**

Solutions relying on calculator technology are not acceptable.

The curve C has equation

$$y = \frac{2}{3}x^3 - 25x - \frac{56}{x} + \frac{194}{3} \qquad x > 0$$

The point P, which lies on C, has coordinates $(2, -8)$

(a) Show that an equation of the tangent to C at P is

$$y = -3x - 2$$

(5)

The point Q also lies on C.

Given that the tangent to C at Q is parallel to the tangent to C at P,

(b) find, using algebra and showing your working, the exact x coordinate of Q.

(5)

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Question 10 continued

Question 10 continued

(Total for Question 10 is 10 marks)

TOTAL FOR PAPER IS 75 MARKS

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