5. $y = \frac{1}{2}x^4 - 3 + \frac{10}{x^2} \qquad x \neq 0$

(a) Find $\int y \, dx$ writing the answer in simplest form.

(3)

(b) (i) Find $\frac{dy}{dx}$ writing the answer in simplest form.

(3)

(ii) Hence find the exact solutions of the equation $\frac{dy}{dx} = 3$

(*Solutions relying on calculator technology are not acceptable.*)

(4)

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Question 5 continued

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Question 5 continued

(Total for Question 5 is 10 marks)

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

The curve C_1 has equation $y = (x + 5)(3x + 2)(2x - 5)$

The curve C_2 has equation $y = 3x^2 - 33x - 50$

Use algebra to find the x coordinates of the points of intersection of C_1 and C_2

(5)

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