11 The curve C has equation $y = \dfrac{3x - 2}{x + 1}$

(a) Write down an equation of the asymptote to C which is parallel to the

(i) x-axis (ii) y-axis

(2)

(b) Find the coordinates of the point where C crosses the

(i) x-axis (ii) y-axis

(2)

(c) Sketch C, showing clearly the asymptotes and the coordinates of the points where C crosses the coordinate axes.

(3)

The straight line l has equation $y = mx + 4$

Given that there are **no** points of intersection between l and C,

(d) show algebraically that the range of possible values of m can be written as

$$a - 2\sqrt{b} < m < a + 2\sqrt{b}$$

where a and b are integers whose values need to be found.

(7)

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Question 11 continued

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Question 11 continued

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(Total for Question 11 is 14 marks)

TOTAL FOR PAPER IS 100 MARKS

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