

DO NOT WRITE IN THIS AREA

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**Answer all ELEVEN questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

**1**  $f(x) = 6x^3 - 13x^2 + ax - 10$  where  $a$  is a constant

Given that  $(3x - 2)$  is a factor of  $f(x)$

(a) show that  $a = 21$

(2)

(b) Hence show algebraically that the curve  $y = f(x)$  has only one intersection with the  $x$ -axis.

(4)

**(Total for Question 1 is 6 marks)**

