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

Solutions relying on calculator technology are not acceptable.

Given that

$$\frac{x+2}{x+4} \leqslant \frac{x}{k(x-1)}$$

where k is a positive constant,

(a) show that

$$(x+4)(x-1)(px^2+qx+r) \leqslant 0$$

where p, q and r are expressions in terms of k to be determined.

(3)

(b) Hence, or otherwise, determine the values for x for which

$$\frac{x+2}{x+4} \leqslant \frac{x}{3(x-1)}$$

(4)

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Question 3 continued

(Total for Question 3 is 7 marks)