

## SAMPLE PAPER 5: PAPER 1

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### QUESTION 5 (25 MARKS)

#### Question 5 (a)

$$f(x) = k(x+a)(x-b)$$

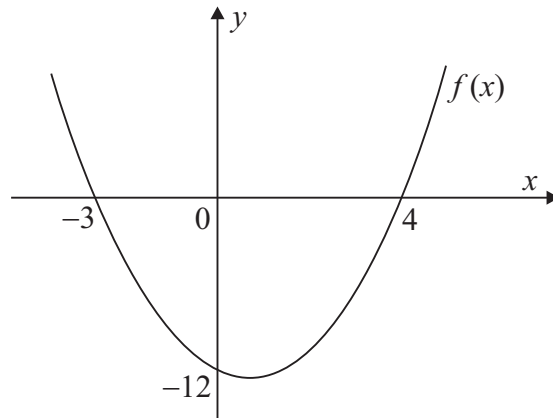
$$f(x) = 0 \Rightarrow k(x+a)(x-b) = 0$$

$$(x+a)(x-b) = 0$$

$$\therefore x = -a, b$$

$$x = -3, 4$$

$$\therefore a = 3, b = 4$$



#### Question 5 (b)

$$f(x) = k(x+3)(x-4)$$

$$f(0) = -12 \Rightarrow k(0+3)(0-4) = -12$$

$$-12k = -12$$

$$\therefore k = 1$$

#### Question 5 (c)

$$f(x) = (x+3)(x-4) = x^2 - x - 12$$

$$f'(x) = 2x - 1$$

$$f'(x) = 0 \Rightarrow 2x - 1 = 0$$

$$\therefore x = \frac{1}{2}$$

$$f\left(\frac{1}{2}\right) = \left(\frac{1}{2} + 3\right)\left(\frac{1}{2} - 4\right) = \left(\frac{7}{2}\right)\left(-\frac{7}{2}\right) = -\frac{49}{4}$$

$$\text{Local minimum: } \left(\frac{1}{2}, -\frac{49}{4}\right)$$


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