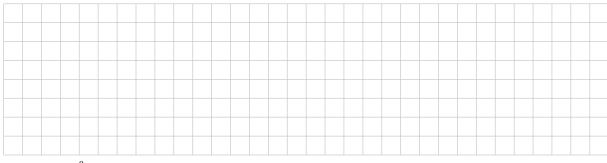
Question 3 (25 marks)

Let $f(x) = -x^2 + 12x - 27, x \in \mathbb{R}$.

(a) (i) Complete Table 1 below.

Table 1							
x	3	4	5	6	7	8	9
f(x)	0	5			8		

(ii) Use Table 1 and the trapezoidal rule to find the approximate area of the region bounded by the graph of f and the x-axis.



(b) (i) Find $\int_{3}^{9} f(x) dx$.



(ii) Use your answers above to find the percentage error in your approximation of the area, correct to one decimal place.