10 (a) Expand $(1-2x)^{-\frac{1}{2}}$ in ascending powers of x up to and including the term in x^3 , simplifying each term as far as possible.

(3)

(b) Write down the range of values of x for which your expansion is valid.

(1)

$$f(x) = \frac{2 - x^2}{\sqrt{(1 - 2x)}}$$

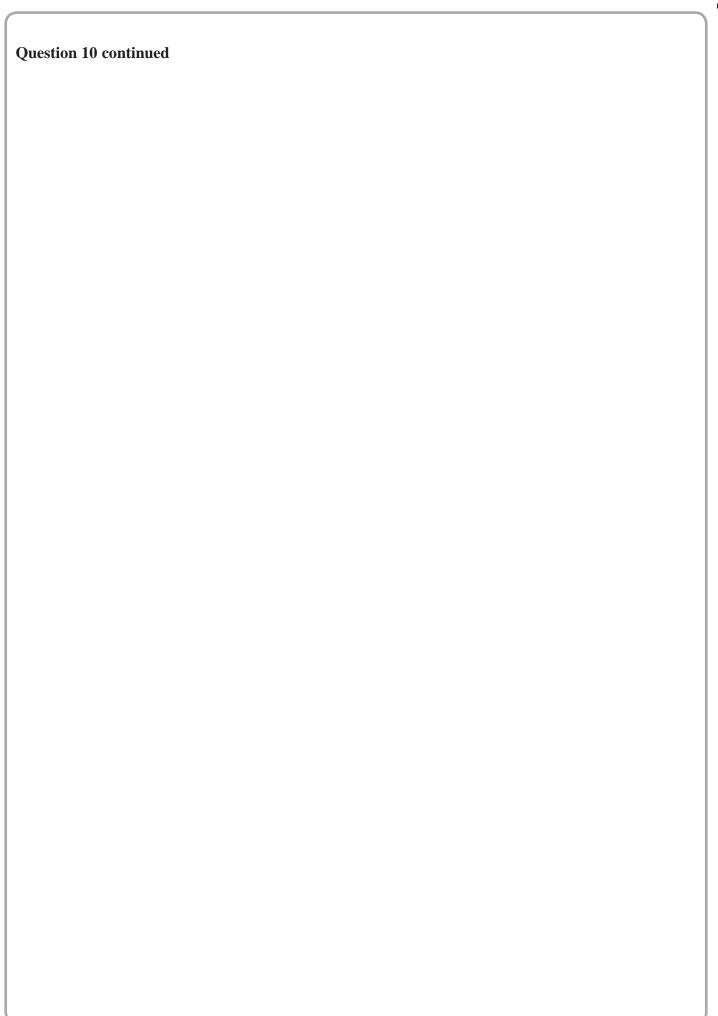
(c) Find the series expansion of f(x) in ascending powers of x up to and including the term in x^3 , simplifying each term as far as possible.

(3)

The region R is bounded by the curve with equation y = f(x), the positive x-axis, the positive y-axis and the line with equation x = 0.2

(d) Using your expansion of f(x) and algebraic integration, find an estimate for the area of R, giving your answer to 4 decimal places.

(4)



Question 10 continued

(Total for Question 10 is 11 marks)

TOTAL FOR PAPER IS 100 MARKS