

5. The equation  $2x^3 + x^2 - 1 = 0$  has exactly one real root.

(a) Show that, for this equation, the Newton-Raphson formula can be written

$$x_{n+1} = \frac{4x_n^3 + x_n^2 + 1}{6x_n^2 + 2x_n} \tag{3}$$

Using the formula given in part (a) with  $x_1 = 1$

(b) find the values of  $x_2$  and  $x_3$  (2)

(c) Explain why, for this question, the Newton-Raphson method cannot be used with  $x_1 = 0$  (1)