2.
$$f(x) = 3x^4 + 2x^2 - 12x + 8$$

Given that $y = f(x)$ has a single turning point at $x = \alpha$,

(a) show that α is a solution of the equation

$$x = \sqrt[3]{1 - \frac{x}{3}}$$

(3)

The iterative formula

$$x_{n+1} = \sqrt[3]{1 - \frac{x_n}{3}}$$

is used with $x_1 = 1$ to find an approximate value for α.

(b) Calculate the value of x_2 and the value of x_5, giving each answer to 4 decimal places.

(3)

(c) Using a suitable interval and a suitable function that should be stated, show that to 3 decimal places α is 0.889

(2)