1 $x_{n+1} = \sqrt[3]{3x_n + 7}$

Use a starting value of $x_1 = 2$ to work out a solution to $x = \sqrt[3]{3x + 7}$

Give your answer to 3 decimal places.

[3 marks]

Answer _____

2 A sphere has radius r cm

An approximate value of r can be found using the iterative formula

$$r_{n+1} = \sqrt{\frac{239}{r_n}}$$

The starting value is $r_1 = 7$

2 (a) Work out the values of r_2 and r_3

[2 marks]

$r_2 =$ _____

$r_3 =$ _____

2 (b) Continue the iteration to work out the radius to 1 decimal place.

[1 mark]

Answer _____ cm

3 An approximate value of a root of an equation, x, can be found using the iterative formula

$$x_{n+1} = \sqrt[3]{5(x_n)^2 - 2x_n - 3}$$

The starting value is $x_1 = 4$

3 (a) Work out the values of x_2 and x_3

[2 marks]

$x_2 =$ _____

$x_3 =$ _____

3 (b) By continuing the iteration, show that the value of x is more than 4.25

[1 mark]

4 A sequence of numbers is formed by the iterative process

$$u_{n+1} = \frac{20}{u_n + 3} \qquad \text{where} \qquad u_1 = 1$$

Work out u_3

Circle your answer.

[1 mark]

$\frac{40}{11}$ $\frac{5}{2}$ 7 5

5

$$x_{n+1} = 5 - \frac{1}{x_n}$$

Use $x_1 = 1$ to work out an approximate solution to $x = 5 - \frac{1}{x}$

Give your answer to 4 significant figures.

[3 marks]

$x =$ _____