



Scan for the solutions

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1 $f(x) = x^2 - 6x + 2$

a. Show that the equation $f(x) = 0$ has a root between $x = 0$ and $x = 1$

b. Show that the equation $x^2 - 6x + 2 = 0$ can be rearranged to give

$$x = \frac{x^2}{6} + 2$$

(4 marks)

Answer _____

2 A square has an area of 70 cm^2 .

Use trial and improvement to find the length of a side, correct to 1 decimal place. You must show all your trials.

(3 marks)

Answer _____

3 $f(x) = x^3 + 4x - 9$

- a. Show that the equation $f(x) = 0$ has a root between $x = 1$ and $x = 2$
- b. Show that the equation $x^3 + 4x - 9 = 0$ can be rearranged to give
 $x = \sqrt[3]{9 - 4x}$
- c. Starting with $x_0 = 1.5$, use the iteration formula $x_{n+1} = \sqrt[3]{9 - 4x_n}$ to work out the values of x_1 , x_2 and x_3 . Give each value correct to 4 decimal places.

(6 marks)

Answer _____

- 4** Use trial and improvement to find the cube root of 300, correct to 1 decimal place. Do not use the cube root key on your calculator. You must show all your trials.

(3 marks)

Answer _____

- 5** The equation $x^3 + 2x = 50$ has a solution between 3 and 4.

Use trial and improvement to find this solution correct to 1 decimal place. You must show all your trials.

(4 marks)

Answer _____

6 The equation $x^3 - 3x = 10$ has a solution between 2 and 3.

Use trial and improvement to find this solution correct to 1 decimal place. You must show all your trials.

(4 marks)

Answer _____

7 A cuboid has a width of x cm, a length of $(x + 2)$ cm and a height of $(x + 5)$ cm. The volume of the cuboid is 200 cm^3 .

Use trial and improvement to find the value of x , correct to 1 decimal place. You must show all your trials.

(4 marks)

Answer _____

8 $f(x) = x^2 + 2x - 5$

a. Show that the equation $f(x) = 0$ has a root between $x = 1$ and $x = 2$

b. Show that the equation $x^2 + 2x - 5 = 0$ can be rearranged to give

$$x = \frac{5}{x + 2}$$

c. Starting with $x_0 = 1.5$, use the iteration formula $x_{n+1} = \frac{5}{x_n + 2}$ to work out the values of x_1 , x_2 and x_3 . Give each value correct to 4 decimal places.

d. Write down an estimate of this root of $f(x) = 0$ correct to 2 decimal places.

(6 marks)

Answer _____

9

The equation $x^3 - x = 20$ has a solution between 2 and 3.

Use trial and improvement to find this solution correct to 2 decimal places. You must show all your trials.

(5 marks)

Answer _____

End of questions | Total 39 marks