Trial & Improvement

How to . . .

The equation

$$x^3 - 3x = 15$$

The first trial will be half way between 2 and 3

has a solution between 2 and 3. Use a trial and improvement method to find this solution.

Give your answer correct to 1 decimal place. You must show **all** your working

we need to do 'one more' trial

x	$x^3 - 3x = 15$	Comment
2.5	$2.5^3 - 3 \times 2.5$ $15.625 - 7.5 = 8.125$	Too small
2.7	$2.7^3 - 3 \times 2.7$ $19.683 - 8.1 = 11.583$	Too small
2.8	$2.8^3 - 3 \times 2.8$ $21.952 - 8.4 = 13.552$	Too small
2.9	$2.9^3 - 3 \times 2.9$ $24.389 - 8.7 = 15.689$	close but too big
2.85	$2.85^3 - 3 \times 2.85$ $23.149125 - 8.55$ $= 14.599125$	this is close but too small so we choose the larger of our 2 options

$x = 2.9$

(4)

Now have a go yourself . . .

Q1. The equation $x^3 + 3x = 41$ has a solution between 3 and 4. Use a trial and improvement method to find this solution. Give your answer correct to one decimal place. You must show **all** your working.

Q2. Use trial and improvement to solve this problem.

$$x^3 - 2x = 7$$

Give your answer to 1 decimal place. Show all your trials and their outcomes.

Q3. The equation $2x^2 + x = 7$ has a solution between $x = 1$ and $x = 2$. Use trial and improvement to find this solution correct to 1 decimal place.

Exam Questions

Q1. Show that the equation $x^3 + 3x - 7 = 0$ has a solution between $x = 1$ and $x = 2$.

Using trial and improvement, find this solution correct to 1 decimal place. Show all your trials and their outcomes.

Q2. The equation $x^3 - 6x = 72$ has a solution between 4 and 5. Use a trial and improvement method to find this solution.

Give your answer correct to one decimal place.

You must show **all** your working.

Ready to be marked ?