

Trial and Improvement

Video 116 on Corbettmaths

Examples

Workout



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Question 1: Find the two consecutive positive integers that the solutions to the following equations lie between.

(a) $x^2 + 5 = 56$

(b) $x^2 + x = 22$

(c) $x^2 + 2x - 1 = 125$

(d) $x^3 - 11 = 90$

(e) $x^3 + 5x = 300$

(f) $x^3 + x^2 - 5x = 644$

Question 2: Use trial and improvement to solve the following equations to 1 decimal place.

(a) $x^2 + 3x + 2 = 86$ has a solution between 7 and 8.

(b) $x^2 - 5x = 40$ has a solution between 9 and 10.

(c) $x^3 - x^2 + 4 = 5.5$ has a solution between 1 and 2.

(d) $2x^2 + 7x = 340$ has a solution between 11 and 12.

(e) $x^3 - 5x^2 = 215$ has a solution between 8 and 9.

Question 3: Use trial and improvement to solve the following equations to 1 decimal place.

(a) $x^3 - x = 449$

(b) $x^3 + 2x = 97$

(c) $x^3 - 2x + 1 = 582$

(d) $x^3 - x^2 = 249$

(e) $2x^3 + x = 71.9$

(f) $x^3 - x^2 + 2x = 136$

(g) $x^3 + 5x = 402$

(h) $x^3 - x = 90$

Question 4: Use trial and improvement to find the value of x , correct to 2 decimal places.

(a) $x^2 + 2x - 2 = 24$ has a solution between 4 and 5.

(b) $x^2 + 5x = 145$ has a solution between 9 and 10.

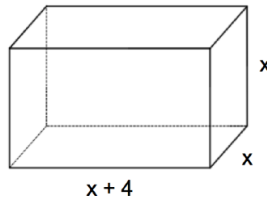
(c) $x^3 - x^2 - 4 = 304$ has a solution between 7 and 8.

(d) $3x^2 - 2x = 5.5$ has a solution between 1 and 2.

(e) $x^3 - 4x^2 = 51.7$ has a solution between 5 and 6.

Apply

Question 1: Shown below is a cuboid with a volume of 500cm^3 .
Find the value of x to one decimal place.



Question 2: The length of a rectangle is 5cm longer than the width. If the area is 90cm^2 , use trial and improvement to find the length of the rectangle.

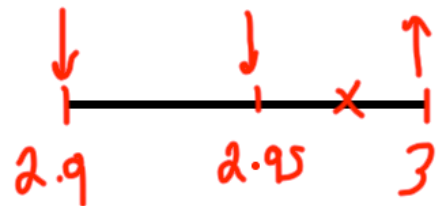
Question 3: Can you spot any mistakes?

The equation $x^3 + 3x = 32$

has a solution between 2 and 3.

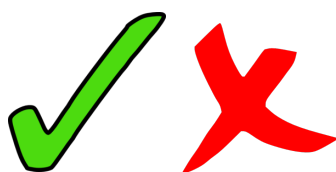
Use trial and improvement to find this solution.
Give your answer to one decimal place.

x	$x^3 + 3x$	Comment
2	$2^3 + 3 \times 2 = 14$	too low
3	$3^3 + 3 \times 2 = 33$	too high
2.9	$2.9^3 + 3 \times 2 = 30.389$	too low
2.95	$2.95^3 + 3 \times 2 = 31.672375$	too low



Answer 3.0

Answers



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