

SOLVING EQUATIONS BY TRIAL AND IMPROVEMENT EXERCISE

Solve the following equations to 1 decimal place

In each case the value of x you are looking for is between 1 and 5.

1) $x^3 + x = 15$

2) $x^3 - 3x = 40$

3) $x^3 + x^2 = 74$

4) $x^3 + 5x = 49$

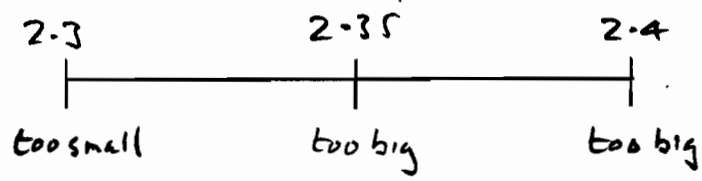
5) $x^3 - 2x^2 = 4$

SOLVING EQUATIONS BY TRIAL AND IMPROVEMENT EXERCISE

1)

$$x^3 + x = 15$$

x	$x^3 + x$	
2	$2^3 + 2 = 10$	too small
3	$3^3 + 3 = 30$	too big
2.5	$2.5^3 + 2.5 = 18.1$	too big
2.3	$2.3^3 + 2.3 = 14.5$	too small
2.4	$2.4^3 + 2.4 = 16.2$	too big
2.35	$2.35^3 + 2.35 = 15.3$	too big

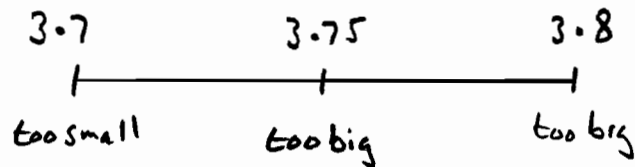


$$x = 2.3 \text{ to 1 d.p.}$$

SOLVING EQUATIONS BY TRIAL AND IMPROVEMENT EXERCISE

$$2) \quad x^3 - 3x = 40$$

x	$x^3 - 3x$	
2	$2^3 - 3 \times 2 = 2$	too small
3	$3^3 - 3 \times 3 = 18$	too small
4	$4^3 - 3 \times 4 = 52$	too big
3.5	$3.5^3 - 3 \times 3.5 = 32.4$	too small
3.7	$3.7^3 - 3 \times 3.7 = 39.6$	too small
3.8	$3.8^3 - 3 \times 3.8 = 43.5$	too big
3.75	$3.75^3 - 3 \times 3.75 = 41.5$	too big

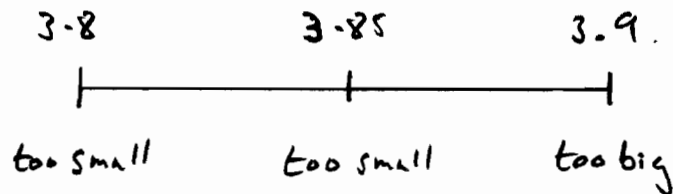


$$x = 3.7 \text{ to 1 d.p.}$$

3)

$$x^3 + x^2 = 74$$

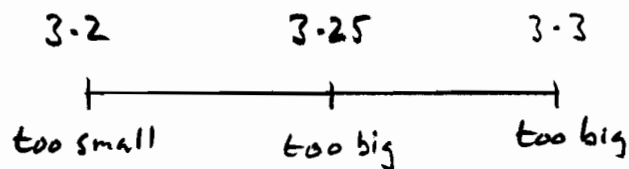
x	$x^3 + x^2$	
3	$3^3 + 3^2 = 36$	too small
4	$4^3 + 4^2 = 80$	too big
3.5	$3.5^3 + 3.5^2 = 55.1$	too small
3.8	$3.8^3 + 3.8^2 = 69.3$	too small
3.9	$3.9^3 + 3.9^2 = 74.5$	too big
3.85	$3.85^3 + 3.85^2 = 71.9$	too small



$$x = 3.9 \text{ to 1 d.p.}$$

$$4) \quad x^3 + 5x = 49$$

x	$x^3 + 5x$	
2	$2^3 + 5 \times 2 = 18$	too small
3	$3^3 + 5 \times 3 = 42$	too small
4	$4^3 + 5 \times 4 = 84$	too big
3.5	$3.5^3 + 5 \times 3.5 = 60.4$	too big
3.3	$3.3^3 + 5 \times 3.3 = 52.4$	too big
3.2	$3.2^3 + 5 \times 3.2 = 48.8$	too small
3.25	$3.25^3 + 5 \times 3.25 = 50.6$	too big

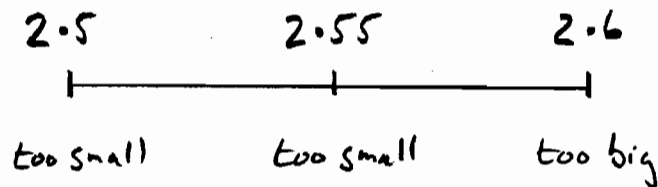


$$x = 3.2 \quad \text{to 1 d.p.}$$

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$$5) \quad x^3 - 2x^2 = 4$$

x	$x^3 - 2x^2$	
1	$1^3 - 2 \times 1^2 = -1$	too small
2	$2^3 - 2 \times 2^2 = 0$	too small
3	$3^3 - 2 \times 3^2 = 9$	too big
2.5	$2.5^3 - 2 \times 2.5^2 = 3.1$	too small
2.7	$2.7^3 - 2 \times 2.7^2 = 5.1$	too big
2.6	$2.6^3 - 2 \times 2.6^2 = 4.1$	too big
2.55	$2.55^3 - 2 \times 2.55^2 = 3.6$	too small



$$x = 2.6 \quad \text{to 1 d.p.}$$