M1.

(a) $-\dfrac{1}{2}$ or –0.5

B1

$-\dfrac{25}{64}$ or –0.390625

ft their $-\dfrac{1}{2}$

B1ft

(b) –0.381966

ft their $-\dfrac{25}{64}$

B1ft

[3]

M2.

(a) Valid explanation

e.g.1   3 or 3.4 labelled in correct place on the x-axis and marking on graph corresponding to $V = 50$

e.g. 2   3 labelled in correct place on the x-axis and markings on graph corresponding to $x = 3$ and $x = 4$

oe

B1 Partial explanation

e.g.1 Marking on graph corresponding to $V = 50$

e.g.2 Markings on graph corresponding to $x = 3$ and $x = 4$

SC1 Marking on graph corresponding to $40 < V < 80$ (not 50) with 3 or value between 3 and 4 labelled in correct place on the x-axis

B2

(b)   Two correct trials [3.25, 3.35] which bracket 50 and 3.3 as the answer

> *B2 Two correct trials [3.25, 3.35] which bracket 50 and 3.3*
> *not the answer*
> *or*
> *Two correct trials [3.3, 3.4] which bracket 50 and 3.3 as the*
> *answer*
>
> *B1 One correct trial 3 < x < 4*

B3
[5]

M3.

Two correct trials [1.235, 1.245] which bracket 5
and
answer 1.24

> *B3 Two correct trials [1.235, 1.245] which bracket 5*
> ***and***
> *answer **not** 1.24*
>
> *B3 Two correct trials [1.24, 1.25] which bracket 5 and*
> *answer 1.24*
>
> *B2 Two correct trials 1.2 ≤ x < 1.3*
>
> *B1 One correct trial 1.1 ≤ x < 1.3*

B4
[4]

M4. Correctly evaluated trial

such that root < trial ≤ 6

> *e.g. $6^3 - 20 \times 6 = 96$ Too big*
> *Obtains 5 < x < 6 or better (need not be stated)*

M1

Improved trial

> *5 < Trial < 1ˢᵗ trial*
> *e.g. $5.5^3 - 3 \times 5.5 = 56.(375)$ or 56.4 Too small*
> *5.1 → 30.(6…) or 30.7 5.2 → 36.(6…)*
> *5.3 → 42.(8…) or 42.9*
> *5.4 → 49.(4…) or 46.5*
> *5.5 → 56.(3…) or 56.4*

M1

Obtains 5.5 ≤ x ≤ 5.6
or better

or Two correct trials [5.55, 5.65] which
bracket 60

> *5.6 → 63.(6…)*
> *5.7 → 71.(1…) or 71.2*
> *5.8 → 79.(1…)*
> *5.9 → 87.(3…) or 87.4*
> *5.55 → 59.(95)*
> *5.56 → 60.(6…) or 60.7*

A1

Tests 5.55 and concludes 5.6

> *Using 2 dp to ensure 1 dp*
> *Strand (ii)*

or Two correct trials [5.55, 5.65] which
bracket 60 and 5.6 for final answer

A1

[4]

M5.2.2 ➔ 28(.248) (and too small)

or Trial evaluated correctly for

> *If equation has been rearranged to equal 0*
> *2.2 ➔ −(1.752)*

2.2

> *If equation has been rearranged to 0 =*
> *2.2 ➔ +(1.752)*

B1

2.3 ➔ 30.5(67) (and too big)

or Trial evaluated correctly for

> *If equation has been rearranged to equal 0*
> *2.3 ➔ +(0.567)*

root

If equation has been rearranged to 0 =
2.3 ➜ –(0.567)
Note: Root is x = 2.276…

B1
[2]