

1.7 Answers

GCSE Mathematics Methods of Solving Equations

1.7.1 Solution to 1.1 The Preferred Method

$$3x + 4 = 19$$

$$3x = 15$$

$$x = 5$$

[3 marks]

1.7.2 Solution to 1.4 Example (Trial and Improvement)

(a) (i) When $x = 10$, $10^3 + 2 \times 10 - 33 = 1000 + 20 - 33$
 $= 987$

[2 marks]

(ii) When $x = 0$, $0^3 + 2 \times 0 - 33 = -33$

[2 marks]

(iii) When $x = 1$, $1^3 + 2 \times 1 - 33 = 1 + 2 - 33$
 $= -30$

[2 marks]

(iv) When $x = 3$, $3^3 + 2 \times 3 - 33 = 27 + 6 - 33$
 $= 0$

[2 marks]

(b) $x = 3$ is the solution

[2 marks]

1.7.3 Solution to 1.5 Example (Spreadsheet Search)

(i) $x = 0.4$

[2 marks]

(ii) $x = 0.6$

[2 marks]

1.7.4 Solutions to 1.6 Exercise

Answer 1

(i) $4x + 2 = 14$

$$4x = 12$$

$$x = 3$$

(ii) $2x + 7 = 15$

$$2x = 8$$

$$x = 4$$

[3, 3 marks]

(iii) $3x + 5 = x + 11$

$$2x = 6$$

$$x = 3$$

(iv) $5x + 2 = 2x + 11$

$$3x = 9$$

$$x = 3$$

[3, 3 marks]

Answer 2

(a) (i) When $x = 0$, $0^3 - 13 \times 0 - 12 = -12$ [2 marks]

(ii) When $x = 1$, $1^3 - 13 \times 1 - 12 = 1 - 13 - 12$
 $= -24$ [2 marks]

(iii) When $x = 5$, $5^3 - 13 \times 5 - 12 = 125 - 65 - 12$
 $= -48$ [2 marks]

(iv) When $x = 4$, $4^3 - 13 \times 4 - 12 = 64 - 52 - 12$
 $= 0$ [2 marks]

(b) $x = 4$ is the solution

Answer 3

(i) $x = 0.1$ [2 marks]

(ii) $x = 0.7$ [2 marks]

Answer 4

(a) (i) When $x = 9$, $\frac{9^2 - \sqrt{9}}{2} = \frac{81 - 3}{2} = 39$ [2 marks]

(ii) When $x = 0$, $\frac{0^2 - \sqrt{0}}{2} = 0$ [2 marks]

(iii) When $x = 4$, $\frac{4^2 - \sqrt{4}}{2} = \frac{16 - 2}{2} = 7$ [2 marks]

(iv) When $x = 1$, $\frac{1^2 - \sqrt{1}}{2} = 0$ [2 marks]

(b) $x = 0$ or $x = 1$ are solutions

Answer 5

(i) $\cos(60) + \sin(60) = 1.366$ [2 marks]

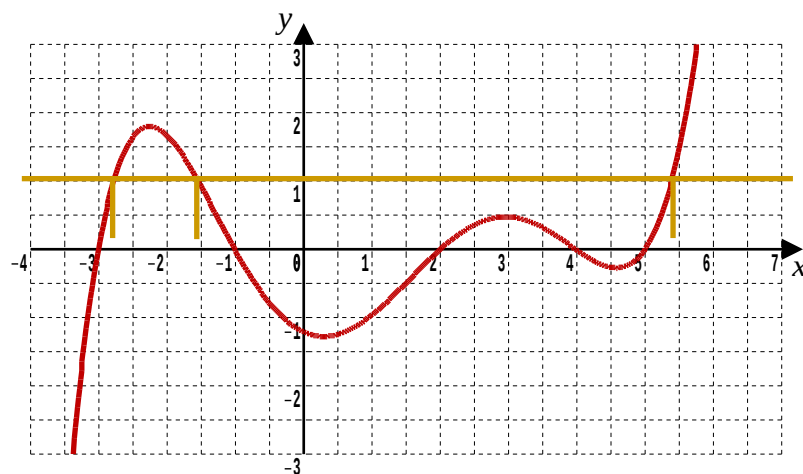
(ii) $x = 140^\circ$ [2 marks]

Answer 6

(i) $x \in \{-3, -1, 2, 4, 5\}$

[5 marks]

(ii)



$x \in \{-2.8, -1.6, 5.4\}$

[5 marks]