
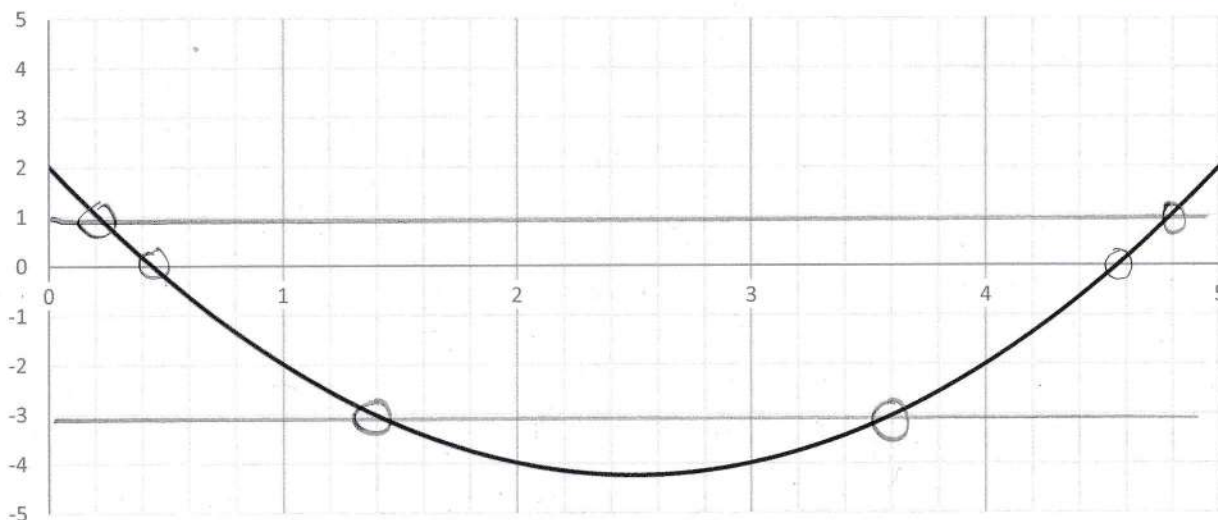


**GRAPHICAL SOLUTIONS - PRACTICE QUESTIONS
NON-CALCULATOR**

Note: your answers do not need to exactly match mine, since they are estimates. They just need to be close.  metatutor

1.

Pictured below is the curve $y = x^2 - 5x + 2$ for $x = 0$ to 5 .



(a) Use the graph to estimate the solutions to $x^2 - 5x + 2 = 0$.

4.5 and 0.5

(b) Use the graph to estimate the solutions to $x^2 - 5x + 2 = 1$.

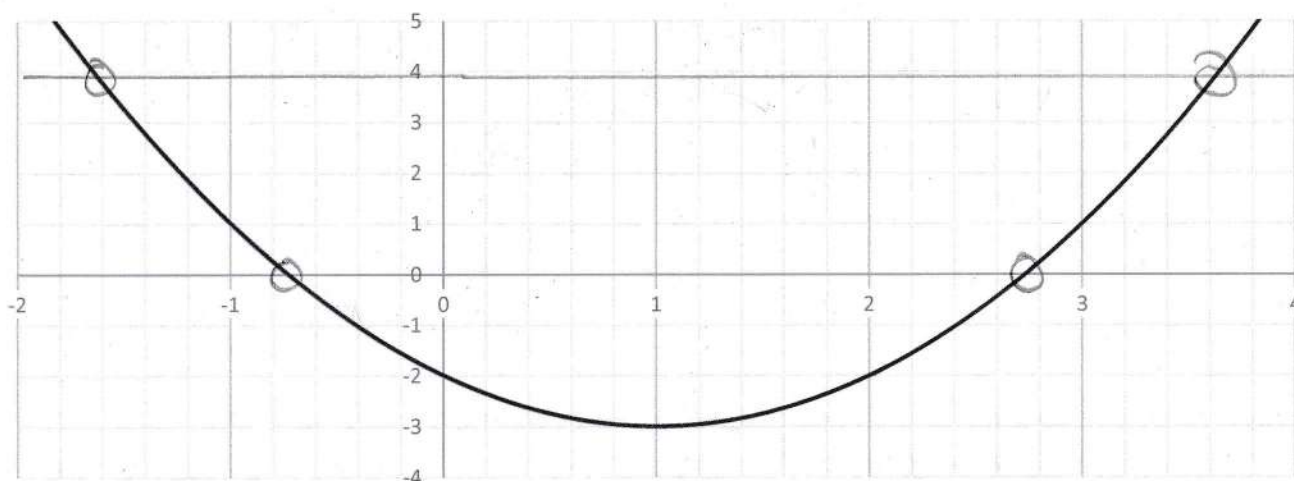
4.8 and 0.2

(c) Use the graph to estimate the solutions to $x^2 - 5x + 2 = -3$.

1.4 and 3.6

2.

Pictured below is the curve $y = x^2 - 2x - 2$ for $x = -2$ to 4 .



(a) Use the graph to estimate the solutions to $x^2 - 2x - 2 = 0$.

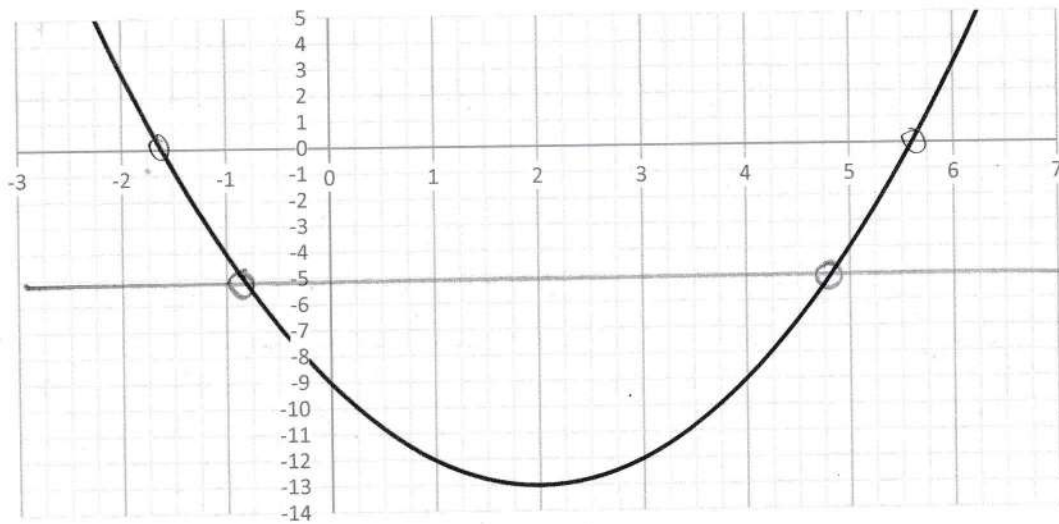
-0.7 and 2.7

(b) Use the graph to estimate the solutions to $x^2 - 2x - 2 = 4$.

-1.7 and 3.7

3.

Pictured below is the curve $y = x^2 - 4x - 10$ for $x = -3$ to 7 .



(a) Use the graph to estimate the solutions to $x^2 - 4x - 10 = 0$.

-1.6 and 5.6

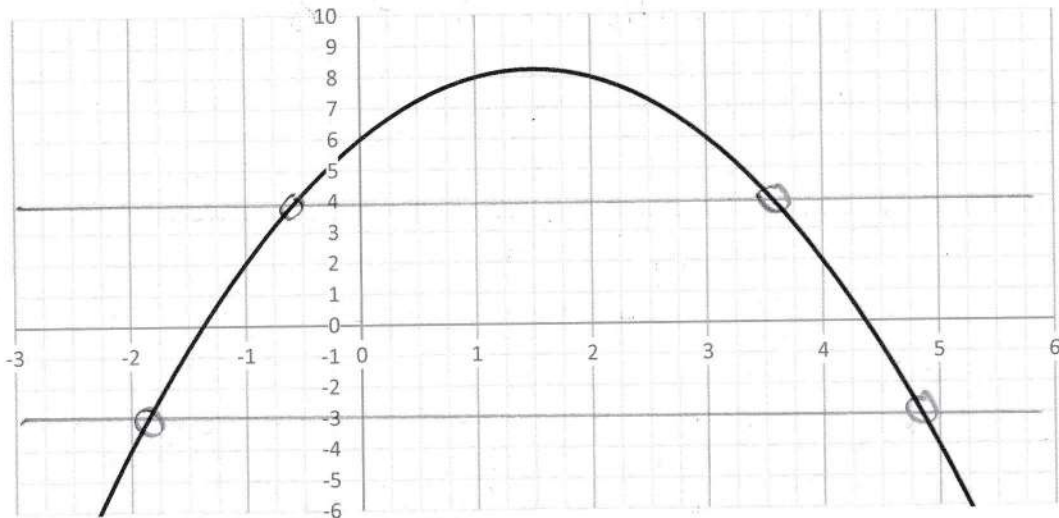
(b) Use the graph to estimate the solutions to $x^2 - 4x - 5 = 0$.

-5 $x^2 - 4x - 5 = 0$
 $x^2 - 4x - 10 = -5$

-0.8 and 4.8

4.

Pictured below is the curve $y = 6 + 3x - x^2$ for $x = -3$ to 6 .



(a) Use the graph to estimate the solutions to the equation $9 + 3x - x^2 = 0$.

-3 $9 + 3x - x^2 = 0$ -3
 $6 + 3x - x^2 = -3$

-1.8 and 4.8

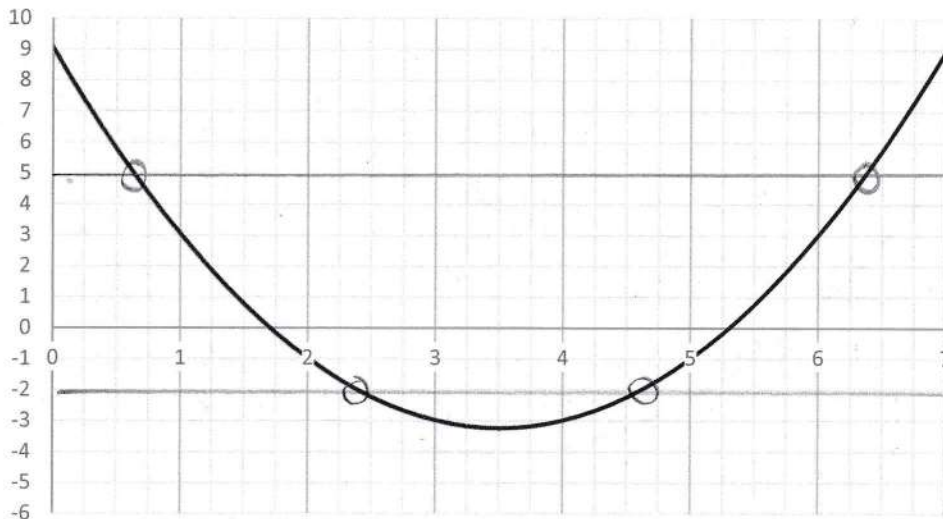
(b) Use the graph to estimate the solutions to the equation $2 + 3x - x^2 = 0$.

$+4$ $2 + 3x - x^2 = 0$ $+4$
 $6 + 3x - x^2 = 4$

3.6 and -0.6

5.

Pictured below is the curve $y = x^2 - 7x + 9$ for $x = 0$ to 7 .



(a) Use the graph to estimate the solutions to the equation $x^2 - 7x + 4 = 0$.

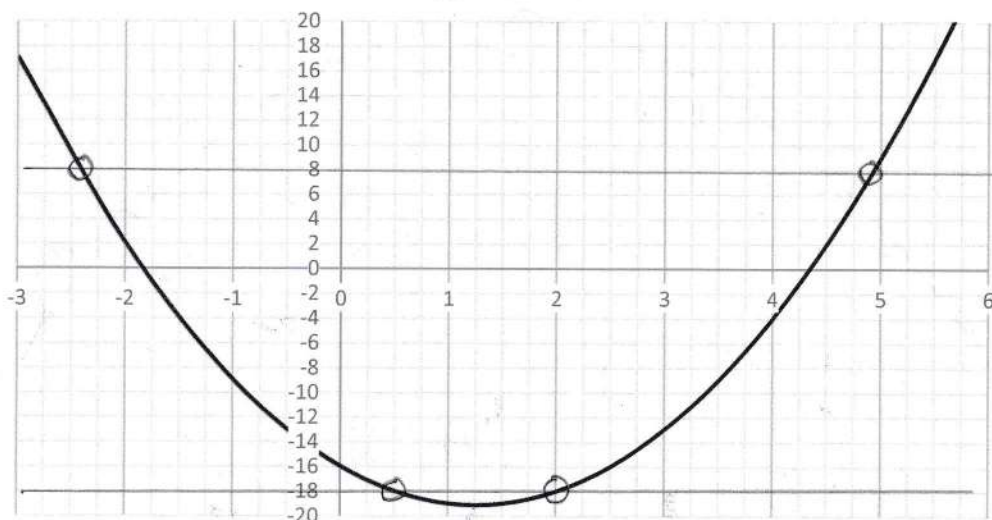
$$\begin{array}{l}
 +5 \quad x^2 - 7x + 4 = 0 \quad +5 \\
 \quad \quad x^2 - 7x + 9 = 5
 \end{array}
 \qquad
 0.6 \text{ and } 6.4$$

(b) Use the graph to estimate the solutions to the equation $x^2 - 7x + 11 = 0$.

$$\begin{array}{l}
 -2 \quad x^2 - 7x + 11 = 0 \quad -2 \\
 \quad \quad x^2 - 7x + 9 = -2
 \end{array}
 \qquad
 2.4 \text{ and } 4.6$$

6.

Pictured below is the curve $y = 2x^2 - 5x - 16$ for $x = -3$ to 6 .



(a) Use the graph to estimate the solutions to the equation $2x^2 - 5x - 24 = 0$.

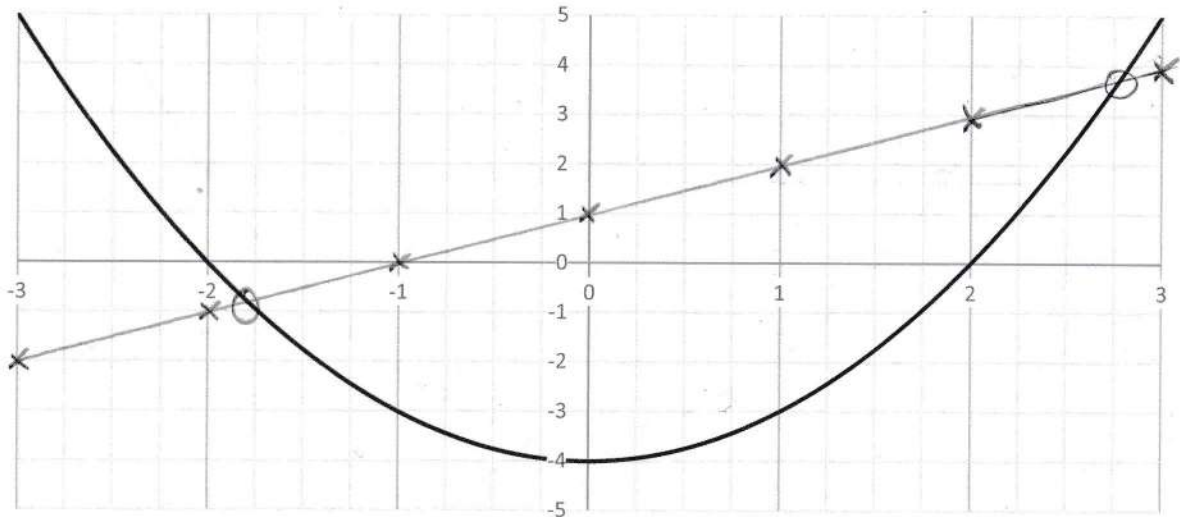
$$\begin{array}{l}
 +8 \quad 2x^2 - 5x - 24 = 0 \quad +8 \\
 \quad \quad 2x^2 - 5x - 16 = 8
 \end{array}
 \qquad
 -2.4 \text{ and } 4.9$$

(b) Use the graph to estimate the solutions to the equation $2x^2 - 5x + 2 = 0$.

$$\begin{array}{l}
 -18 \quad 2x^2 - 5x + 2 = 0 \quad -18 \\
 \quad \quad 2x^2 - 5x - 16 = -18
 \end{array}
 \qquad
 0.5 \text{ and } 2$$

7.

Pictured below is the curve $y = x^2 - 4$ for $x = -3$ to 3 .



(a) Complete the table of values for $y = x + 1$.

x	-3	-2	-1	0	1	2	3
y	-2	-1	0	1	2	3	4

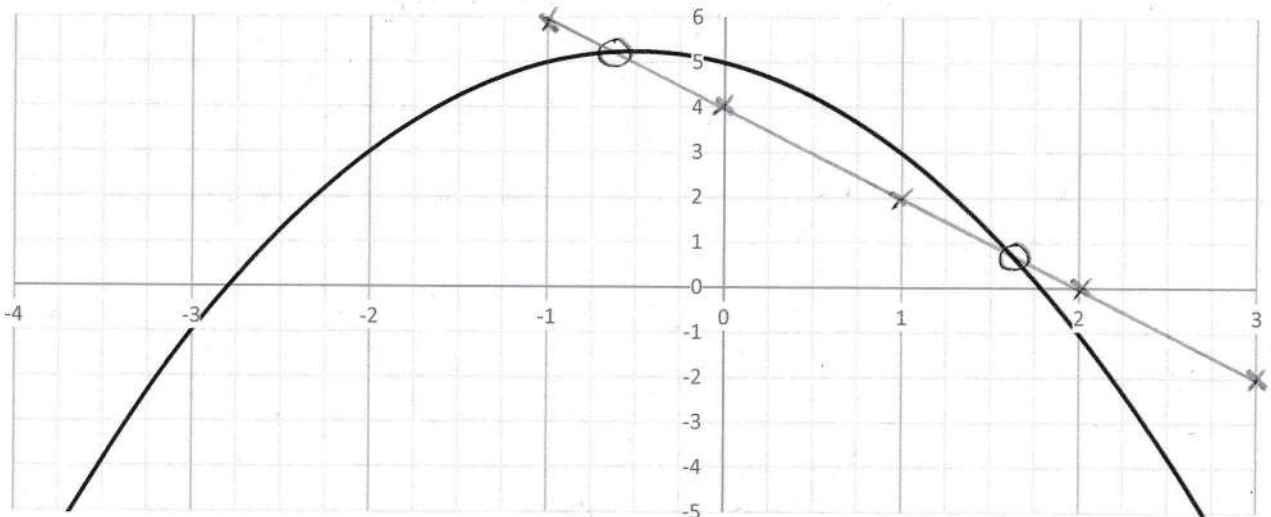
(b) On the same axis, plot the line $y = x + 1$.

(c) Use the graph to estimate the solutions to the equation $x^2 - 4 = x + 1$.

-1.8 and 2.8

8.

Pictured below is the curve $y = 10 - x - x^2$ for $x = -4$ to 3 .



(a) On the same axis, plot the line $y = 4 - 2x$.

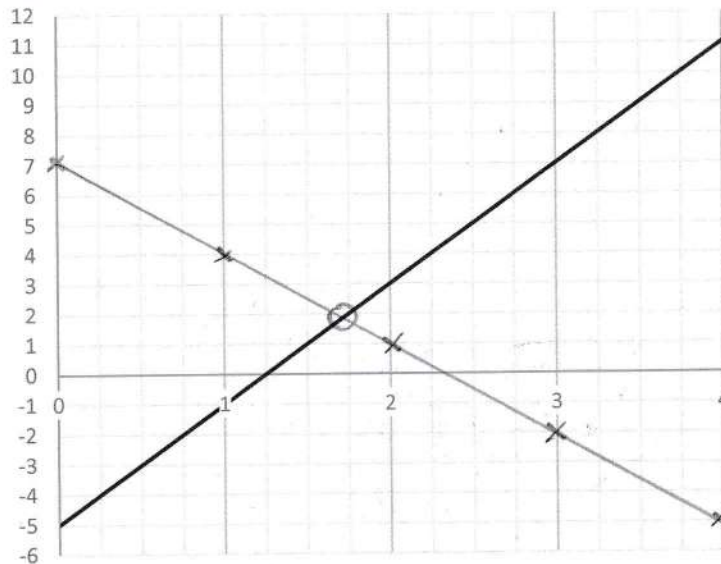
x	-4	-3	-2	-1	0	1	2	3
y	12	10	8	6	4	2	0	-2

(b) Use the graph to estimate the solutions to the equation $10 - x - x^2 = 4 - 2x$.

-0.6 and 1.6

9.

Pictured below is the graph $y = 3x - 1$ for $x = 0$ to 4 .



By drawing a second graph on the grid, estimate the solution to the simultaneous equations:

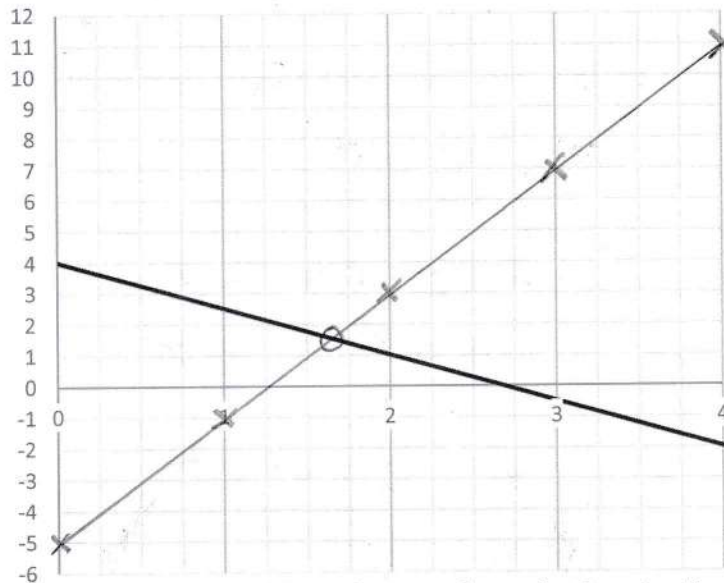
$$\begin{aligned} y &= 3x - 1 \\ y &= 7 - 3x \end{aligned}$$

x	0	1	2	3	4
y	7	4	1	-2	-5

$$x = 1.7 \quad y = 2$$

10.

Pictured below is the graph $2y + 3x = 8$ for $x = 0$ to 4 .



By drawing a second graph on the grid, estimate the solution to the simultaneous equations:

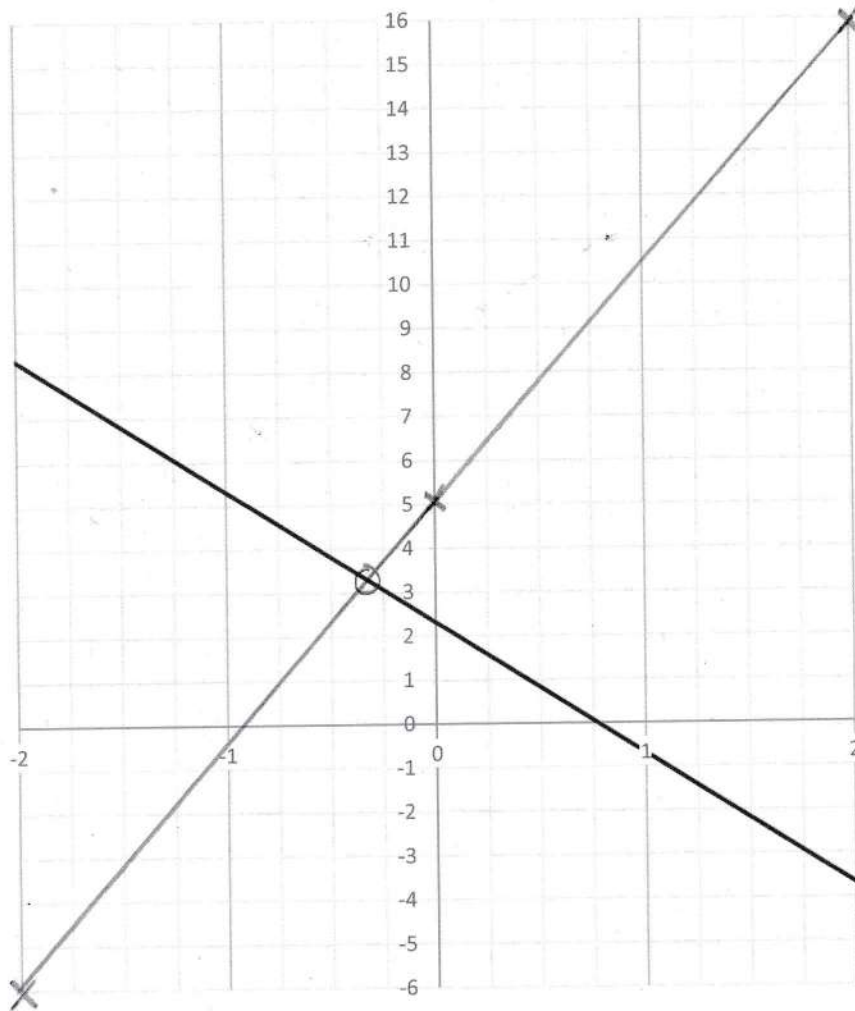
$$\begin{aligned} 2y + 3x &= 8 \\ y &= 4x - 5 \end{aligned}$$

x	0	1	2	3	4
y	-5	-1	3	7	11

$$x = 1.7 \quad y = 1.5$$

11.

Pictured below is the graph $3y + 9x = 7$ for $x = 0$ to 4 .



By drawing another graph on the grid, estimate the solution to the simultaneous equations:

$$3y + 7x = 7$$

$$2y - 11x = 10$$



$$2y = 10 + 11x$$

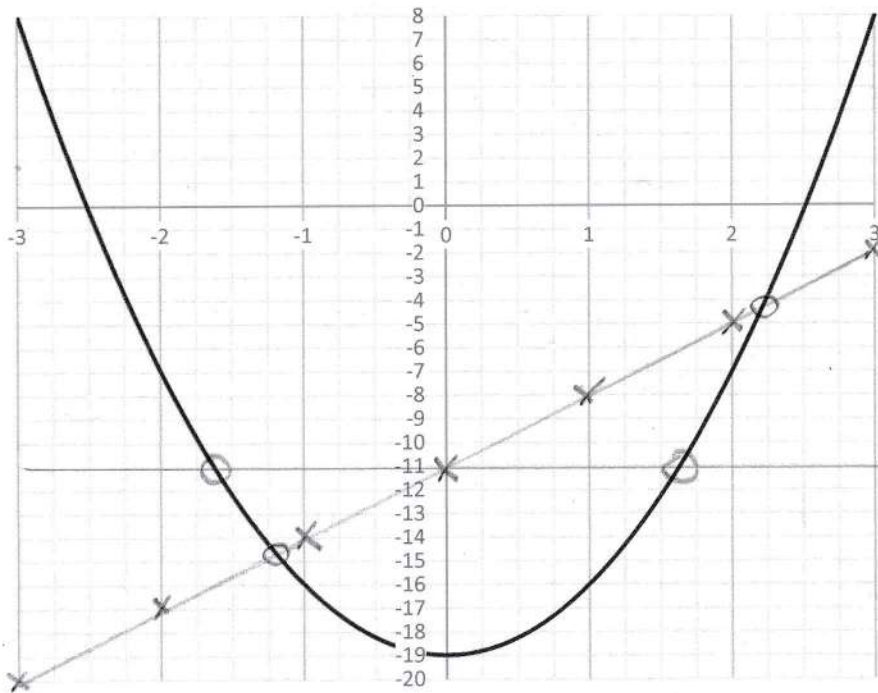
$$y = 5 + \frac{11}{2}x$$

x	-2	-1	0	1	2
y	-6	-0.5	5	10.5	16

$$x = -0.3 \quad y = 3.4$$

12.

Pictured below is the curve $y = 3x^2 - 19$ for $x = -3$ to 3 .



(a) Use the graph to estimate the solutions to the equation $3x^2 - 8 = 0$.

$$-1.6 \text{ and } 1.6$$

$$3x^2 - 19 = -11$$

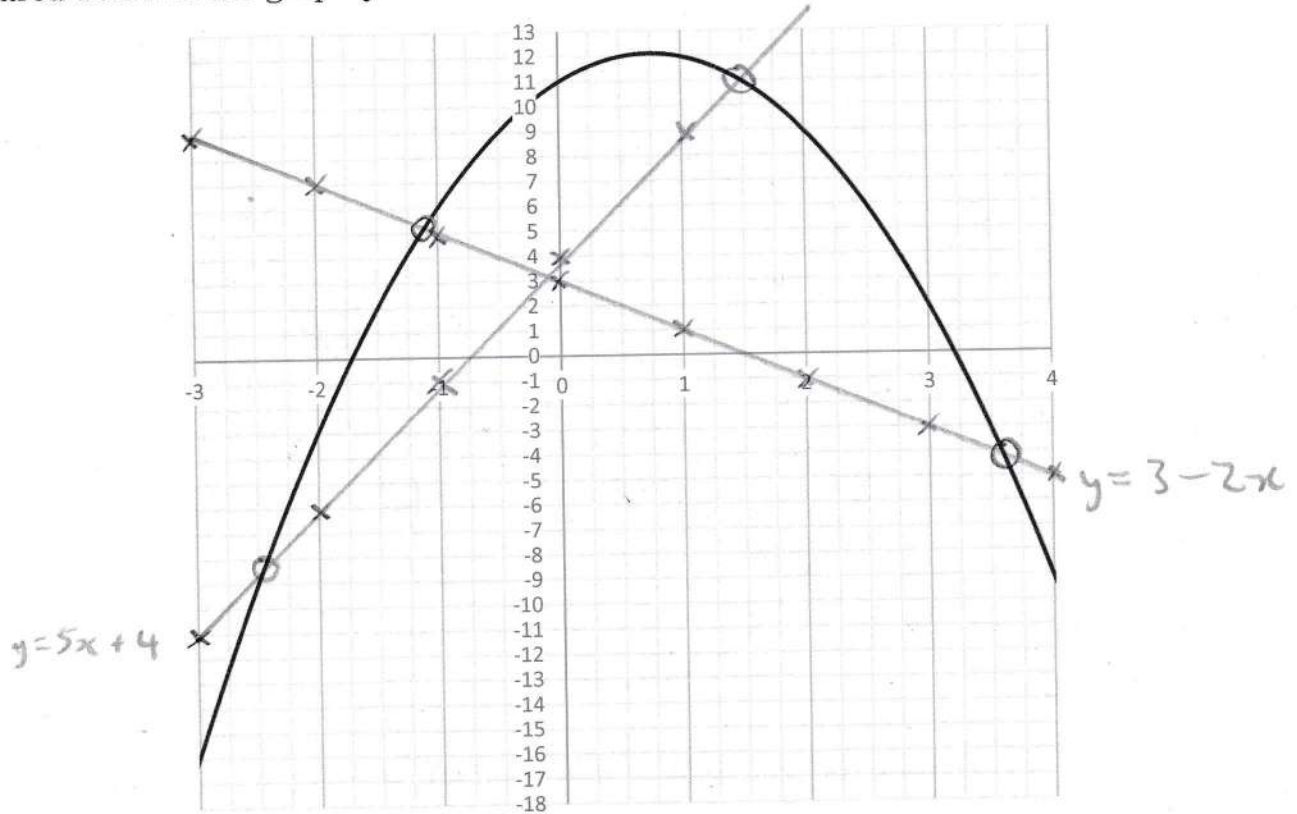
(b) By drawing an appropriate straight line, use the graph to estimate the solutions to the equation $3x^2 - 19 = 3x - 11$.

x	-3	-2	-1	0	1	2	3
y	-20	-17	-14	-11	-8	-5	-2

$$x = -1.2 \text{ and } 2.2$$

13.

Pictured below is the graph $y = -2x^2 + 3x + 11$ for $x = -3$ to 4 .



(a) By drawing an appropriate straight line, use the graph to estimate the solutions to the equation $-2x^2 + 3x + 11 = 5x + 4$.

x	-3	-2	-1	0	1	2	3	4
y	-11	-6	-1	4	9	14	19	24

$$x = -2.4, 1.5$$

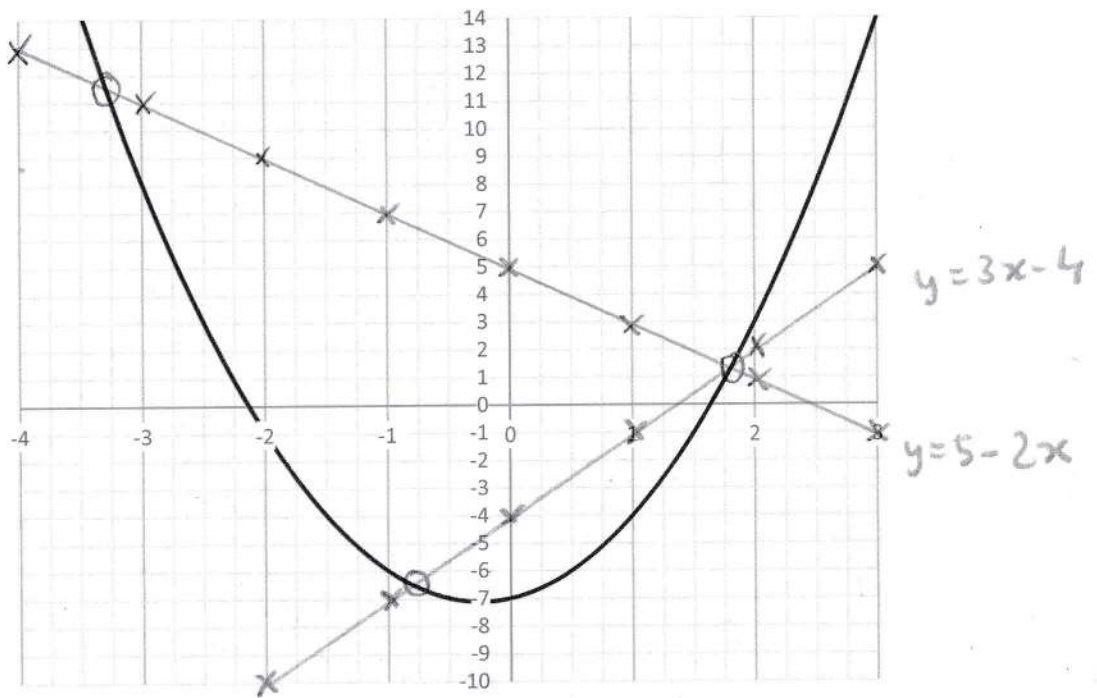
(b) By drawing an appropriate straight line, use the graph to estimate the solutions to the equation $-2x^2 + 3x + 11 = 3 - 2x$.

x	-3	-2	-1	0	1	2	3	4
y	9	7	5	3	1	-1	-3	-5

$$x = -1.1, 3.6$$

14.

Pictured below is the graph $y = 2x^2 + x - 7$ for $x = -4$ to 3 .



(a) By drawing an appropriate straight line, use the graph to estimate the solutions to the equation $2x^2 + 3x - 12 = 0$.

$$\begin{array}{r}
 -2x^2 + 3x - 12 = 0 \\
 -2x \quad -2x \\
 \hline
 2x^2 + x - 12 = -2x \\
 +5 \quad +5 \\
 \hline
 2x^2 + x - 7 = 5 - 2x
 \end{array}$$

x	-4	-3	-2	-1	0	1	2
y	13	11	9	7	5	3	1

$$x = -3.3, 1.8$$

(b) By drawing an appropriate straight line, use the graph to estimate the solutions to the equation $2x^2 = 2x + 3$.

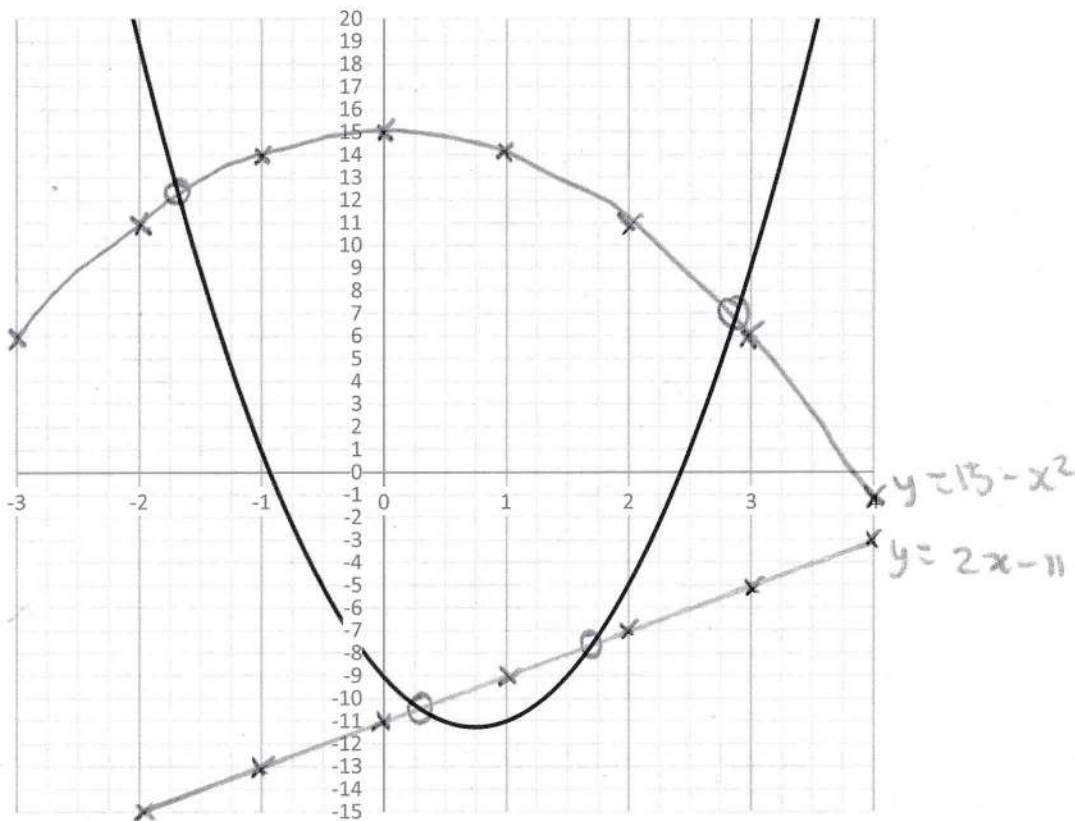
$$\begin{array}{r}
 2x^2 = 2x + 3 \\
 +x \quad +x \\
 \hline
 2x^2 + x = 3x + 3 \\
 -7 \quad -7 \\
 \hline
 2x^2 + x - 7 = 3x - 4
 \end{array}$$

x	-4	-3	-2	-1	0	1	2	3
y	-16	-13	-10	-7	-4	-1	2	5

$$x = -0.8, 1.8$$

15.

Pictured below is the curve $y = 4x^2 - 6x - 9$ for $x = -3$ to 4 .



(a) Use the graph to estimate the solutions to the equation $4x^2 - 2x - 3 = 6x - 5$.

$$\begin{array}{r}
 4x^2 - 2x - 3 = 6x - 5 \\
 -4x \quad -4x \\
 4x^2 - 6x - 3 = 2x - 5 \\
 -6 \quad -6 \\
 4x^2 - 6x - 9 = 2x - 11
 \end{array}$$

x	-3	-2	-1	0	1	2	3	4
y	-17	-15	-13	-11	-9	-7	-5	-3

$$x = 0.3, 1.7$$

(b) Use the graph to estimate the solutions to the equation $5x^2 - 6x = 24$.

$$\begin{array}{r}
 5x^2 - 6x = 24 \\
 -x^2 \quad -x^2 \\
 4x^2 - 6x = 24 - x^2 \\
 -9 \quad -9 \\
 4x^2 - 6x - 9 = 15 - x^2
 \end{array}$$

x	-3	-2	-1	0	1	2	3	4
y	6	11	14	15	14	11	6	-1

$$x = -1.7, 2.9$$