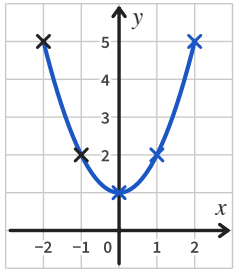
Plotting quadratic graphs

ANSWERS

1

Plot the points from the table for $y = x^2 + 1$. Join them with a smooth curve.

x	−2	−1	0	1	2
y	5	2	1	2	5

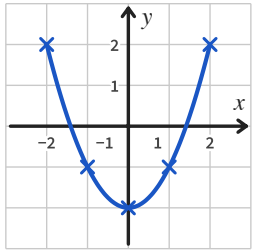


Lowest point (0, 1)

2

Complete the table for $y = x^2 - 2$. Draw the graph.

x	−2	−1	0	1	2
y	2	−1	−2	−1	2

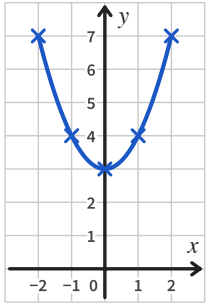


Lowest point (0, −2)

3

Complete the table for $y = x^2 + 3$. Draw the graph.

x	−2	−1	0	1	2
y	7	4	3	4	7

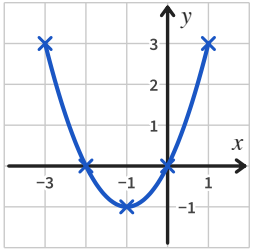


Lowest point (0, 3)

4 *Notice the change!*

Complete the table for $y = x^2 + 2x$. Draw the graph.

x	−3	−2	−1	0	1
y	3	0	−1	0	3



Lowest point (−1, −1)

5

Complete the table of values for $y = x^2 - 4x + 1$. Write down the lowest point of the graph.

x	−1	0	1	2	3	4	5
y	6	1	−2	−3	−2	1	6

$x = -1$: $1 + 4 + 1 = 6$

Lowest point (2, −3)

6

Theo works out $y = x^2$ when $x = -4$.
He types [−] [4] [x^2] into his calculator and gets −16. Explain his mistake.
What is the right value of y?

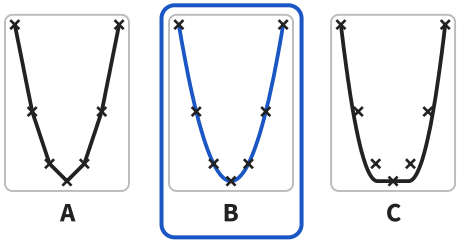
no brackets: it did 4^2 first

$(-4)^2 = -4 \times -4$

$y =$ 16

7

Three students draw $y = x^2$ through the same points. Which drawing is right? What is wrong with the other two?



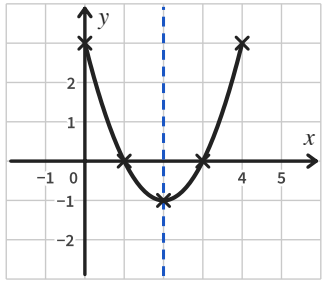
A: straight lines, not a smooth curve

C: a flat bottom, not rounded

Right drawing B

8

This is the graph of $y = x^2 - 4x + 3$. Write down its lowest point and its line of symmetry.



Lowest point (2, −1)

Line of symmetry $x = 2$

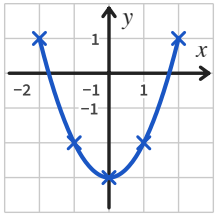
Plotting quadratic graphs *further practice*

ANSWERS

9

Complete the table for $y = x^2 - 3$. Draw the graph. Write down the lowest point.

x	−2	−1	0	1	2
y	1	−2	−3	−2	1

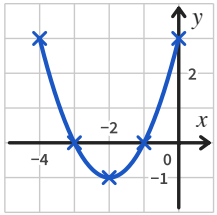


Lowest point (0, −3)

10

Complete the table for $y = x^2 + 4x + 3$. Draw the graph. Write down the lowest point.

x	−4	−3	−2	−1	0
y	3	0	−1	0	3



Lowest point (−2, −1)

11

Complete the table for $y = x^2 - 2x - 8$. Write down the lowest point of the graph.

x	−2	−1	0	1	2	3	4
y	0	−5	−8	−9	−8	−5	0

at −2: 4 + 4 − 8 = 0

Lowest point (1, −9)

12

Nadia made this table for $y = x^2 + x$. One value is wrong. Which one? What should it be?

x	−3	−2	−1	0	1	2
y	6	−6	0	0	2	6

$(-2)^2 = 4$, not −4

4 + (−2) = 2

Right value at $x = -2$, $y = 2$

13

This is a table of values for $y = x^2 - 6x + 5$. Write down the lowest point and the equation of the line of symmetry of its graph.

x	1	2	3	4	5
y	0	−3	−4	−3	0

the least y is −4, at x = 3

the table is the same either side of 3

Answer (3, −4) and $x = 3$

14

Work out the value of $y = x^2 - 8x + 12$ when $x = -3$.

$(-3)^2 - 8 \times (-3) + 12$

= 9 + 24 + 12

$y =$ 45

15

Complete the table for $y = x^2 + 6x + 7$. Write down the lowest point and the line of symmetry.

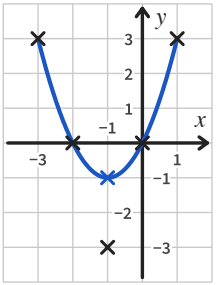
x	−6	−5	−4	−3	−2	−1	0
y	7	2	−1	−2	−1	2	7

at −4: 16 − 24 + 7 = −1

Answer (−3, −2), $x = -3$

16

Owen plotted the points for $y = x^2 + 2x$. One point is wrong. Which one? Where should it be?



$(-1)^2 + 2 \times (-1) = 1 - 2 = -1$

Right point (−1, −1)