

Solving Quadratic Equations

1. Draw axes such that $-4 \leq x \leq 8$ and $-20 \leq y \leq 40$. Plot the graph of the equation $y = x^2 - 2x - 15$.
2. Use your graph to solve the equation $x^2 - 2x - 15 = 0$.
3. Solve the equation $x^2 - 2x - 15 = 0$ by factorising the expression $x^2 - 2x - 15$.
4. Solve the equation $x^2 - 2x - 15 = 0$ by the method 'completing the square'.
5. Solve the equation $x^2 - 2x - 15 = 0$ by using the formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
6. On the same axes as question 1, plot the graph of the equation $y = 2x + 1$. Use the two graphs to solve the equation $x^2 - 4x - 16 = 0$ and explain how your method works.
7. Confirm that your solution to question 6 is correct by solving the equation $x^2 - 4x - 16 = 0$ by using the formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$