

Quadratic Formula, Completing the Square and Simultaneous Linear-Quadratic Equations

Year 11 · Algebra · y11-alg-solve-linear

Name: _____

Date: _____

Class: _____

Score: ____ / ____

Instructions

Answer every question in Practice. Try the Challenge section once Practice is complete. 10 questions in total.

Practice

1. Use the quadratic formula to solve $x^2 - 5x + 6 = 0$. Give the smaller value first, separated by a comma.

2. Complete the square for $x^2 + 6x + 5$. Write in the form $(x + p)^2 + q$.

3. Use the quadratic formula to solve $x^2 + 3x - 4 = 0$. Give the smaller value first, separated by a comma.

4. Complete the square for $x^2 - 8x + 10$. Write in the form $(x + p)^2 + q$.

5. Solve the simultaneous equations $y = x + 1$ and $y = x^2 - 5$. Give the two possible x values, smaller first, separated by a comma.

6. The quadratic formula is $x = (-b \pm \sqrt{b^2 - 4ac}) \div 2a$ — the whole numerator is divided by $2a$. Use it to solve $x^2 - 7x + 12 = 0$. Give the smaller value first, separated by a comma.

7. For $x^2 + bx$, the value to add and subtract is $(b/2)^2$. For $x^2 + 10x + 3$, complete the square: write in the form $(x + p)^2 + q$.

8. The discriminant $b^2 - 4ac$ tells you how many real solutions a quadratic has: positive means two, zero means one, negative means none. Find the discriminant of $x^2 + 4x + 4 = 0$.

Challenge

1. Solve $x^2 - 4x - 1 = 0$ using the quadratic formula. Give your answers to 2 decimal places, smaller value first, separated by a comma.

2. Solve the simultaneous equations $y = 3x - 2$ and $y = x^2 + x - 2$. Give the two possible x values, smaller first, separated by a comma.
